

HOW TO DETERMINE THE ADMIXTURE OF ORGANIC OR INORGANIC SUBSTANCES IN RYE AND WHEAT FLOUR.

(Prize essay of the German Millers' Association by Dr. L. Wittmack, Professor of the Agricultural College at Berlin.)

Translated by THE MILLING WORLD.

X.

3. Smut.

SMUT is only too often found in grains, especially in wheat, although it has been effectually stamped out in some sections of the country by a careful use of sulphate of copper on the seed grains. The black powder which fills the grains attacked by rust, is poisonous and has the odor of salt herring pickle. It is formed by the spores, the seed of the fungus and in spite of repeated cleanings, some of it is liable to be mixed with the flour. A sample of bread recently obtained from Trieste looked bluish-black from the immense quantities of rust spores it contained. The bread was made of two-thirds of rye, and one-third of wheat flour.

We have in Germany two kinds of smut on wheats, *Tilletia Caries* and *Tilletia laevis*. The former is the most common. It has dark yellow-brownish colored spores, which are almost spherical and 17 to 18 mkm. in diameter. The surface of these spores is grooved in a net-like form, while those of *T. laevis* are smooth. Smut is only sparingly found on rye; the spores of the rye-smut, *Tilletia secalis*, have the net-like appearance of their surface more strongly marked than the wheat-smut. Another species of smut is found on corn where it produces large excrescences on the ears, stalks, etc. Its spores are smaller and by its abundance, the meal made from such corn can become dangerous to the health of the consumer. The spores of the corn fungus are smaller than those of the rye, and have also a net-like surface. Smaller yet than these, and having a smooth surface, are the spores of the fungus on oats. This is comparatively harmless because the wind blows it away from the grain as soon as it is matured.

In sections where the so-called "cow-wheat," *Melanopyrum arvense*, grows in abundance, we often find its seeds among the wheat. They look, when fresh, almost like wheat grains, but when dried, become bluish-black, due to a pigment, Rhinanthine, which they contain and which produces a color resembling aniline-blue. If flour contains a large admixture of this cow-wheat, the bread made from it looks bluish-black or violet. A rye-bread containing only 1.59 per cent. of the admixture was found to have a strong violet tint. Ergot, in larger quantities will produce a similar color. Under a microscope we distinguish the cow-wheat by its thick-walled, regular six-cornered cells, the membranes of which look like a string of pearls, because they are dotted with little pimples. These cells contain no starch, only albumen and fat. The outer row of cells are placed on their small end, and seen from above, look like round paving stones. The best results are obtained, when the flour is boiled in caustic potash; this destroys the starch and allows a closer inspection of the other substances. Besides this the membranes of the cow-wheat cells swell rapidly and bring their

pearl-string-like appearance into better view when found in a cross section. If the flour has been stored damp, or in a damp place, we will find mould fungus, and, sometimes, bacteria. The former are easily recognized by their abundance of mycelium threads, which, however, are so small and delicate, that they can be seen only by the aid of the most powerful glasses.

Small animalculæ, like little eels, *Anquilla tritici*, are sometimes found in wheat flour, mostly in England. They live in the curiously aborted, black-greenish, spherical wheat grains, which are at times found among the English wheat. This phenomenon is known as the "gout," or the "cockle-disease" of the wheat. The latter expression is derived from the fact that the cockle seeds have a resemblance to these peculiar wheat grains.

In conclusion I will state that none of my experiments on the specific gravity of the paste, the index of refraction, polarized light, etc., etc., for the determination of the quality of the flour, have been crowned with satisfactory results, as the differences in numbers among the various kinds of flours were too small, to allow the preparation of any reliable averages. In a similar manner I have been unable to determine microscopically the difference between the common wheat, *Triticum sativum*, and the so-called "rough" English wheat, *Triticum turgidum*. The latter has generally a thinner bran, and the cells of its circular layer have thicker membranes than the common wheat, and the smaller starch grains. But the differences vary so much among themselves that they are entirely unreliable. The hairs in the rough wheat are shorter, but as whole hairs are but rarely found in the flour, this would constitute no mark of distinction. There is but one physical aid: To obtain the gluten by washing. Then we find the small quantity held by the *Triticum turgidum*, and this is now generally utilized in practical life.

General rules to obtain the gluten from wheat have been given by Balland in his latest publication on the subject:

1. The same flour will produce varying quantities of gluten, according to the methods used. The difference is due to the moisture in the gluten and to the washing.

2. The gluten holds a variable quantity of moisture. It contains more in soft and less in hard wheats; less, when it is washed immediately after mixing; more, when the dough was allowed to stand for two hours; gluten holds a smaller quantity of moisture when taken from the old flour than when obtained from freshly ground material.

3. Certain substances, such as common salt, acetate of ammonium, potash, glycerine, etc., are liable to abstract the water from gluten. It then loses weight and becomes hard; but if treated with an abundance of water, it regains its former weight and all the qualities of good gluten.

4. Prolonged washing causes a loss of weight in the gluten. That obtained from hard wheat loses less in this way than that from soft; gluten from fresh made dough less than that obtained from a dough prepared two hours. If taken from old flours the gluten loses more by prolonged washing than that taken from fresh flour. A definite quantity of gluten from fresh flour placed in water for 24 hours, loses 10

per cent; that from old flour, 20 per cent.

5. To avoid mistakes in the determination of moist gluten, Balland recommends the following: Make a dough of 50g. flour and 20 to 25g. water; let it stand for 25 minutes and divide into two equal parts. From one-half wash the gluten immediately; from the other half one hour later. After the water runs off perfectly clear, weigh it; wash for five minutes more and weigh again. In this manner we obtain four different figures for the gluten of the same flour, and from these we take the average.

Speaking about the changes induced in flour by age, Balland says:

1. The changes induced by age are of various kinds. The moisture in the flour does not depend upon its age, but upon the moist or dry condition of the atmosphere. Under average conditions the differences amount to 0.8 to 1 per cent. The fatty substances do not suffer any change in weight, but they lose their sweetness and becomes rancid. The saccharine substances decrease in quantity, but do not in proportion to the resulting acidity. This acidity varies with different wheats; it forms earlier and stronger in flours from soft than in those from hard wheat. Estimated as sulphuric acid it equals from 20 to 120g. per meter centner in the former, and from 20 to 70g. in the latter. This acidity seems to be in direct connection with the changes in the albuminous substances, which in the beginning are found in the flour almost all in the form of insoluble gluten; these decompose later on, but do not lose any weight. The gluten liquifies and loses all of its qualities. The starch remains unchanged.

2. Poorly bolted flours contain more acid, more woody fibers in the form of bran, more fats and more sugar; also more gluten. Such flours are of poor keeping quality.

3. Flour, packed in sacks, changes faster than that stored in closed vessels.

4. With equal bolting the changes are the same whether the flour is produced by rollers or by stones.

5. That part of the starch body which is next to the bran, is more acid than the central portion, contains more gluten and, as a consequence, changes more rapidly.

THE ARMY WORM.

Several caterpillars have been popularly but inaccurately called the army worm; but according to a recently published pamphlet by Prof. C. V. Riley of the Entomological Commission, the real worm which is so destructive to growing grass and grain is the *Leucania unipunctata*, a species that has a very wide range on this continent. The worm is the larva of a moth about an inch and a half in wing expansion, and of a reddish-gray color, which lays its eggs in wild, or cultivated grasses, or in grain along the inner base of the terminal blades, where they are yet doubled, or between the stalk and its surrounding sheath, or even in the cut straw of old stacks, or in corn stalks. The larvæ feed for a time after hatching in the fold of the leaf, which they so resemble in color as usually to escape observation. They are stationary in habits so long as they have sufficient food, but take up the march when their pasture is exhausted; and in those seasons when they have multiplied to excess they constitute a veritable

army marching in solid rank. Their occasional sudden appearance in vast numbers over large stretches of territory is one of the phenomenal features of their life; but it is not so wonderful a fact after all. They are nearly always with us in greater or less numbers, and if the season is a dry one, they multiply prodigiously. An immense crop is accordingly produced, and then, perhaps every other one laying seven or eight hundred eggs, stock the fields and pastures in profusion, depositing the eggs for the immense host which is to appear in the following year. In confirmation of this view, examinations of the weather records show that the years preceding army worm years have been universally characterized by drought. Three broods may be produced in a year.

Their natural enemies are no less than fourteen species of birds and numerous parasites. The usually applied remedies look to the wholesale destruction of the worms or the eggs. Among them are burning the old grass; preferably as late as possible in the spring; digging a ditch to serve as a trap into which they fall on their march, after which they may be destroyed in various ways, mashing them in the field with heavy rollers, and dragging a rope across the field to crush them. Thin tillage is also a preventive, by causing the worms to be exposed to the sun.

THE FIRST BREAK IN HIGH MILLING.

The first break, preceded by a thorough cleaning of the wheat, has always commanded special attention in high milling, says Pappenheim's *Mueller Zeitung*. In a number of mills the last cleaning is done on the so-called "pointing stones" and after that, when as much of the detached and loosened dust and bran particles have been removed as is possible under the circumstances, the grain goes to the first break. Until a few years ago the first break was made in high milling only with French burr stones. The work done was very satisfactory and it took sometime before this first break was given to rollers, which in the meantime had been introduced on the succeeding breaks. It was currently accepted that stones were better adapted for this particular purpose than rollers; but a few experiments soon demonstrated that the dark flour of the first break was colored not so much by dust as by the bran, and that the bran on the kernels became less resistant for the succeeding breaks. As large bran particles are desirable, the outer cuticle should be injured but little, if any. It was customary to produce as little first break flour as possible, and although good results had already been obtained in this direction with stones, the introduction of rollers far exceeded the expectations of success.

The flour obtained in the first and second breaks is of poor quality, because it contains impurities. No intelligent miller can be pleased to see a fine flour from the first break; his conclusions are, in such a case, that either the machinery or the manipulator need an inspection. The desired effect of the first break is to split the kernel along the groove, so that any possible dirt will be exposed. This at the same time loosens many of the germs, which can then be separated with ease. The more thorough

the cleaning of the wheat, the smaller will be the quantity of first break flour, which in such cases should not exceed one-half per cent. Of course the selection of grooves in the rollers is of importance here, but even if a mill has only two kinds, a most excellent result is attainable by intelligent manipulation. The grooves are better a little too coarse than too fine and the distance between the rollers must be adjusted in such a manner that only the larger grains are split. The second break will then split all the others. In this case it is better to add an additional break if necessary. Mills which are equipped with a larger number of rollers and can break the different sizes of kernels on different roller work, of course, correspondingly faster.

As stated above, in high milling, the miller desires for the first and second breaks as little flour and middlings as possible. These latter, especially, he wants to obtain on the third or fourth break, which then, by careful manipulation, give him the finest grades of flour. And with the grooved rollers, better than with anything else, we are able to reduce the grain into middlings almost at our pleasure, which demonstrates their advantage in high, as well as in flat milling. Anything here said about the advantage of the roller over the stone on the first break also applies to the chilled disks, which after all don't differ much from the stones in their actions.

WHAT A BUSHEL WILL BUY.

Just now, while the low price of wheat is agitating the farmer's mind, and causing some doubt in the breast of the merchant as to whether he will be able to collect his bills, it is well to consider the question in all its bearings. It is doubtful if the farmers of the Northwest have stopped to consider whether they are really very worse off now than they were two years ago when the price of No. 1 hard was \$1.08. While it is true that wheat is 25 cents a bushel cheaper than it was then, it is also true that the cost of living, as compared with that time, is a great deal less. A careful comparison of prices of all staple articles of consumption now and at this time in 1882, shows that the cost of nearly everything the farmer uses has been reduced nearly, if not as much, in proportion as the price of wheat. If the farmer who is complaining that he ought to get \$1 a bushel for his wheat this year will sit down and figure a little, using the statements below, which are perfectly reliable, he will discover that he can buy as much for a bushel of wheat now, at 84 cents, as he could two years ago at \$1.05. Add to this the enormous increase in the amount of production, and he will find that he isn't in as great danger of bankruptcy as he may have imagined himself to be.

In 1882 the total wheat yield of Minnesota was 32,000,000 bushels, and the total corn yield 16,000,000 bushels, in round figures. The average yield of wheat was estimated to be about fifteen bushels per acre. This year the total wheat crop is estimated to be over 40,000,000 bushels, an increase of 8,000,000, while the total corn crop will reach 24,000,000 bushels, an increase of 8,000,000. Taking the Minneapolis market as a basis for prices in the Northwest, hard wheat sold at \$1.08 in September, 1882, declined to \$1.05 in October, and remained nearly steady at that price till the close of the year. The bulk of the crop of 1882 was sold on a basis of \$1.05 for No. 1 hard wheat, delivered in Minneapolis. The value of the wheat crop that year, counting the entire crop, and making an allowance for seed and home consumption, was \$33,600,000. In 1882 corn sold at an average price of 75 cents per bushel, which made the total value of that crop \$12,000,000. The total revenue from wheat and corn in Minnesota in 1882 was \$45,600,000. Taking the estimate

of the present wheat crop of 40,000,000 bushels at 84 cents per bushel, the price now being paid in Minneapolis and Duluth for cash and September, the total cash value will be \$33,600,000, exactly the same as that of 1882. The total corn crop of 24,000,000 bushels at 52 cents, the present ruling price, will give \$12,480,000. The total value, then, in dollars, of the wheat and corn crop of Minnesota for 1884 will be \$46,080,000, against \$45,600,000 in 1882. To recapitulate:

	1882.	Bushels.	Average Price.	Total Value.
Total wheat crop.....	32,000,000		\$1.05	\$33,600,000
Total corn crop.....	16,000,000		.75	12,000,000
Total value of both crops.....				\$45,600,000
Total wheat crop.....	40,000,000		.84	\$33,600,000
Total corn crop.....	24,000,000		.52	12,480,000
Total value of both crops.....				\$46,080,000

As wheat and corn are the principal productions they are taken as the basis of the wealth of the state. From the above figures it will be seen that, notwithstanding the low price of wheat and corn this year there will be so much more to sell that the revenue from these products will be greater than when prices were 25 cents a bushel higher. The prices of other farm products have not decreased, it must be remembered, in anything like the same ratio. Oats are selling now at only 7 cents less than in September, 1882. Barley is worth as much now as then, and flax seed is worth 10 cents a bushel more. Cattle are higher, and hogs are about the same. Taking into consideration the greatly increased yield of crops of all kinds, and the comparatively small differences in price of everything except wheat, the farmers of the state will receive more money for their products than ever before. The quality of all kinds of grain and vegetables was never better in the history of the state. There will be less low grade wheat and corn and oats this year than ever before, and farmers will reap the benefits in a much higher average of prices. A farmer whose income in 1882 from a farm of 100 acres was, say, \$1,000, with the price of wheat \$1.05, will find himself in receipt of as large, if not larger, income this year from the same farm, while the expenses are reduced from 15 to 20 per cent, as shown below.

A careful investigation shows that the price of all staple commodities of life has steadily decreased during the past five years. The comparison, for the purpose of this article, is made with 1882. In that year lumber was from 20 to 25 per cent dearer than now. The following figures show the exact difference in prices then and now. These prices are to retail dealers, and the prices to farmers are of course proportionately higher:

	1882.	1884.
Scantling, 12 to 16 feet, per M.....	\$15.00	\$12.00
Scantling, 16 to 20 feet.....	17.50	13.00
Common boards.....	15.00	12.00
Fencing.....	19.00	16.00
Shingles, xx clear.....	8.90	2.90
Lath.....	2.25	2.00
Flooring, dressed firsts.....	40.00	36.00
Flooring, seconds.....	38.00	32.00
Rough furnishing, first clear.....	49.00	45.00
Stock boards.....	38.00	35.00

Hardware has declined from 25 to 30 per cent in value. Bar iron which sold for \$3.25 wholesale, sells for \$2.40 now. Horse nails have declined from 18 cents to 16. Barbed fence wire, which is a heavy item of expense to the farmer, has declined from 9½ cents per pound to 5½ cents. Building paper which sold then at \$2.25, sells now at \$1.50. White lead is 50 cents per 100 pounds cheaper, though oils have not declined to any extent. From the above figures it will be seen that buildings and fences cost from 15 to 20 per cent less now than when wheat was worth \$1.05, and only a moderately large crop.

In the matter of clothing there is a difference of about 15 per cent. Heavy flannels

and woolen goods of all kinds have declined fully that much since 1882, and other qualities of staple dry goods show about the same decrease. The following figures show the wholesale prices then and now of a few staple goods:

	1882.	1884.
	Cents.	Cents.
Prints, per yard.....	10	8½
Ginghams.....	9 @10½	7
Brown muslin.....	10½ @13	7½
Bleached shirtings.....	10 @13	8½
Cheviots.....	10 @12½	8½

Fine goods, such as silks and merino dress goods and fancy articles of the dry goods trade, have not declined much; and if the farmer goes to buy his wife a silk dress he will have to pay about as much now as he would two or three years ago. But on blankets and flannels, and heavy woolen goods for winter wear, the reduction is about 15 per cent.

Ready-made clothing is also much cheaper. The reduction is not so much in fine goods as on ordinary wearing apparel. The reporter was shown, in a large clothing house in St. Paul, a suit of strong, well-made clothing, suitable for a boy sixteen or eighteen years old, the price of which was \$3.50. An excellent suit, stylish in cut and well made, was marked \$10, and a regular swell outfit, consisting of a four-button cut-away coat, high-cut vest and corkscrew pants, only costs \$15. This same clothing, the dealer said, sold for at least 20 per cent. more money in 1882. Boots and shoes are 10 to 15 per cent. cheaper than two years ago, and all other articles of wearing apparel are not less than 10 per cent. cheaper. Groceries and table supplies of every kind are much cheaper, as the following list of retail prices show:

	1882.	1884.
White sugar, per lb.....	10½ @.12	.08 @.08½
Brown sugar, per lb.....	.09 @.10	.07 @.07½
Molasses, per gal.....	.50 @.90	.50 @.75
Flour, best patents, per 100 lbs.....	\$4.75	\$3.15
Flour, bakers, per 100 lbs.....	3.50	3.00
Bacon, per lb.....	.18	.14½
Hams.....	.16½	.14

Canned goods 10 per cent less.

Inquiry and comparison shows that almost every article of household use is from 10 to 15 per cent. cheaper than two years ago.

Machinery is one of the heaviest items in the farmer's expenses, and a reduction in the cost of the implements necessary to carry on his work successfully is quickly felt. The cost of all farm machinery is from 12 to 30 per cent. less than two years ago. A self-binder for which the farmer had to pay \$300 then he can buy now for \$200. A farm wagon can be bought now for \$80 that cost \$90 then. Plows, harrows, drills, seeders, hay forks, and all other agricultural implements show about the same reduction. A set of harness for his team, which cost \$25 in 1882, can be bought now for \$20.

A big item in the expense of the farmer on the wide prairies is fuel. Very little wood is used, and coal has to be brought a long distance. The figures show that the reduction in hard and soft coal and wood since the winter of 1882 is a little more than 5 per cent. Hard stove coal, which sold then \$9.75 to \$10.25, now sells at \$8.75 to \$9.50. Illinois soft coal is now selling at \$4.50, a reduction of 50c to \$1 per ton. Iowa coal, which sold at \$4.75 to \$5.25, now sells at \$4. These are St. Paul prices, to which must be added freight to final destination and the local dealer's profit. The reduction of about 5 per cent. in freight which has been made on all Northwestern roads to local points is also an important item. In the matter of fuel this reduction of carrying charges ought to benefit the consumer, as the local dealer is able to sell his fuel now at the same profit he made two years ago and still give his customers the benefit of the cheaper freight rates. This reduction applies both ways. In the first place the farmer can send his wheat to

market nearly 10 per cent. cheaper than he could two years ago, and his lumber, coal, groceries and everything else he has to buy is delivered to him about 5 per cent. cheaper. It may be that he receives the benefit of the reduction in grain freights in the increased price he gets for his grain at his local station. In that case the difference is included in the comparative prices given above. In those figures comparison is made on the basis of prices in St. Paul, consequently the reduction in freight rates should be added to the reduction in the present cost of the articles mentioned. The local dealer can now buy his goods in St. Paul 15 to 20 per cent. cheaper, and has to pay 5 per cent. less freight than in 1882. He can thus give his customers the benefit of the difference in freight and still make as much profit as before. Whether he does this or not may be a matter of mere conjecture, but there is no doubt that active and constantly increasing competition compels him to divide with the farmer.

The above figures have been carefully collected from reliable dealers in the various articles, bills in many cases being referred to for actual proof. In every case the article upon which comparison is made was exactly the same.

The above statements and comparisons show conclusively that a bushel of wheat now at 85c will buy as much as a bushel of wheat at \$1.05 in 1882. The prices of wheat used for the purposes of comparison in this article are not to be understood as the prices obtained by the farmer at country stations. They are the prices of wheat delivered at St. Paul or Minneapolis, and net prices to the farmer are freight and handling charges less. From present indications the price of wheat will not go lower, but will probably advance before the bulk of the crop is marketed in which case the difference in favor of the farmer will be greater than estimated above.—*Pioneer-Press.*

THE CHEMICAL NATURE OF DIFFERENT STARCH GRAINS.

This is the title of a paper read by Dr. Bruekner before the Wiener Akademie der Wissenschaften, in which he especially handles the question of the identity or difference of C. Naegeli's "granulose," W. Naegeli's "amylodextrin," Jessens "soluble starch," and Nasse's "amidulin." The paper is too long to translate in full, but the author comes to the conclusions: That the interior portion of starch granules is protected by a membranous outer layer which is impervious to the action of water. There is no difference that he can detect between the portion of starch grain soluble in water, which is called amidulin by Nasse, and the substance extracted by means of saliva by C. Naegeli, and named by him granulose. The soluble filtrate obtained by exhausting starch paste with water contains a substance identical with the granulose or amidulin. The difference between these substances is not chemical, but physical, and depends upon the state of cohesion or aggregation of the micellæ composing them. The author failed to find the difference in chemical behavior maintained to exist between granulose and amylodextrin by W. Naegeli, who states that the former is thrown down by lead acetate and tannic acid, while the latter is not. On the contrary, both reagents throw down a copious precipitate. The difference, also claimed by Naegeli, that precipitated starch is insoluble in water, while amylodextrin is soluble, is also denied. Other differentiations of Naegeli are denied *in toto*, and Bruekner states that to all intents and purposes amylodextrin and amidulin are identical. With regard to the iodine reaction of starch, the author contests the views of Sachse, especially as regards the loss of color at high temperatures by the iodide of starch. He shows

that the iodide may resist a great degree of heat, and that the loss of color depends on the fact that iodine has a greater affinity for water than starch has, and consequently is more soluble at high temperatures. The various kinds of starch do not take the same colors with equal amounts of solid iodine, potato starch and that from arum giving a blue, while wheat and rice starch give a violet tint. The filtrates from all starch pastes, no matter from what original sources, give a blue color.

Special Correspondence.

PHILADELPHIA'S BIG TIME.

It is perfectly safe to say that never in the history of the United States has any city had more intelligence assembled within its limits than Philadelphia has at the present time. The American Association for the Advancement of Science, composed of almost every scientific man in the United States, holds its annual meeting, to which the British Association, a similar but older organization, which held its annual meeting in Montreal during the past week, has been invited and of which large numbers of members already have arrived.

The Institute of American Mining Engineers held its annual session and finished its business yesterday. Add to all this the International Electrical Exhibition, and we must admit, that apparently all the great minds and talent of the country are assembled here for once.

To speak understandingly about the Electrical Exhibition would be a premature attempt. It seems natural for such displays to be behind time and in an unfinished condition when the appointed hour for opening arrives; there is something wanted here and something missing there; one important exhibit did not arrive in time; another had been misplaced by a misunderstanding, and the many other various sources of annoying delays, have been noticeable in this exhibition as well as they have been at other times and places. Thos. A. Edison, who is here himself, has the largest dynamo on exhibit that ever was manufactured; very appropriately it has been named "Jumbo." It is of 150 horsepower and operates 500 lights in the lecture room of the building. When this monster is in motion and curious people approach rather near, they are liable to destroy the exact working of the watches in their pockets. The watches, at least their steel parts, become magnetized, and act as if they were bewitched; they lose or gain time, or stop entirely. Their de-magnetization is an expensive operation, and visitors are beginning to heed the frequently repeated lesson.

The Edison Company has the largest number of dynamos at work; then there are exhibits of machines, similar in principle, but different in construction, by the United States Company, the Brush Co., the Ball Co., and the Thomson-Houston Company.

To the machinist, the observer or the student, these electrical exhibits are of interest at any time, but to the average man they become attractive only when the last rays of daylight have disappeared and the whole buildings are flooded in the dazzling light of electricity, more brilliant than the sunlight. The clear cloudless sky with the full moon shedding her beams over the city, rather interfere with the total effect of the display, but by next week the moon will rise late enough to allow a dark sky and a full realization of the beauties of electrical lighting. Then your correspondent will endeavor to make a short description of all those exhibits which may interest the readers of THE MILLING WORLD.

A few words about the scientific men. It does seem that they live in an atmosphere all by themselves; for instance, Prof. Lesley, the state geologist of Pennsylvania, is president of the Scientific Association for this

year; he is a resident of Philadelphia, and yet there hardly seems to be a citizen of this city who knows him personally, and only a very small fraction who are honest enough to confess that they have actually never heard of him. Up to last night the number of members of the American Association present was about 900, and 300 Englishmen. The number of papers read is large, but most of a technical nature, too technical generally, for anybody but specialists. The mechanical section, however, has some papers of general interest on the programme, of which I will try to have an abstract prepared for next week's issue. There are several of general interest which, I think, will be appreciated by the readers of THE MILLING WORLD. TRAVELER. Philadelphia, Sept. 6, 1884.

A GRATEFUL HUSBAND.

[From the Rochester Post-Express.]

Merchant—"Hasn't Fogg made his appearance yet this morning?"
Head Book-keeper—"No, sir."
"Strange! Have you examined his books?"
"Yes, sir, they are correct to a cent."
"What about the cash drawer?"
"Not a cent gone."
"This is very strange. Can you explain it?"
"I have just heard that he had eloped."
"With my daughter?"
"No, sir; with your wife."
"Poor wretch! How I pity him. Stay. You say he has no money?"
"None that I know of."
"Make out a check for a hundred thousand and mail it to him, care of John C. Eno. That'll reach him. It shan't be said that I failed to appreciate the honest endeavors of a poor young man."

FROM JUMPING CREEK.

"Say!" he called as he walked across the street to a policeman yesterday at the circus grounds, "have you seen a slim little chap, with a red moustache and a diamond pin?"
"I don't remember."
"Well, I want to hunt him up. If you'll help me find him I'll give you a yoke of two-year-old steers."
"What's he done?"
"Say! I'm mad all over, but I can't help but—ha! ha! ha!—laugh at the way he gum-fuzzled me half an hour ago. I'm a flat, I am! I'm rich pasture for cows! I'm turnips with a heap of green tops!"
"What's the story?"
"Well, I was over there under a wagon counting my money, I brought in \$13. I was wondering whether I'd better keep it in my hind pocket or pin it inside my vest, when the little chap comes creeping under and says: 'Partner, there's a wicked crowd around here. Put that money in your boot.' Say!"
"Yes."
"Struck me as the sensiblest thing I could do. It was in bills. And I pulled off my right boot and chucked 'em in. Say! d'ye see anything green in that?"
"No."
"Well, I hadn't walked around long before a chap came up and remarks that he has \$5 to bet to a quarter that he can out-jump me. Say, d'ye know me?"
"No."
"Well, when I'm home I'm the tall jumpist of Washtenaw County. I jump higher and further than anything, animal or human. I kiver more ground than a panther; I sail higher than a jumpin' hoss. I'm open to even bets day or night, and I go out and jump 'leven feet just to astonish the children. When that 'ere stranger offered such odds I looked at his leg for a minute and remarked that I was his huckleberry."
"I see."
"Say! up went the stakes, off came my butes, and I out-jumped him by three feet six."
"And what?"
"And when I looked around for my butes that infernal little hornet with the sandy moustache had made off with the one the cash was in. Say!"
"Yes."
"I live on Jumpin' Creek. I'm the creek myself. I'm called a daisy when I'm home, and every time I trade horses or shotguns or dogs, I paralyze the other feller. I'm previous. I'm prussic acid. I'm razors. Say!"
"Yes."
"If I kin lay my hands on that little chap, I'll make every bone crack. But it was a good one on me! Eh? Ever seen it beaten? Played me

fur a fool and bit me the fust time. Say! If you see me—ha! ha! ha!—laughing, don't think I'm tight; I'm mad. But say! old Jumping Creek was too smart, wasn't he? Needed something to thin his blood, and he got it from a chap who didn't seem to know putty from the band wagon! Say! Ha! ha! ha!—Free Press.



A PROFITABLE LITTLE INVESTMENT.

One of the most satisfactory, useful and profitable little investments a mill owner can make is in the Bowsheer Speed or Motion Indicator, with or without alarm. To any responsible party on 30 days' trial

Give size and speed of shaft you wish to connect to. Address, N. P. BOWSHER, South Bend, Ind. Or any leading Mill Furnisher.

BOLTING CLOTH.

Do not order your cloth until you have conferred with us. It will pay you, both in point of quality and price. We are prepared with special facilities for this work. Write us before you order.

CASE MANUFACTURING CO., Columbus, Ohio.

Office and Factory, 5th Street, north of Naughten.

BUCKWHEAT FLOUR

Always commands a better price, and gives better satisfaction to the consumer when made by the aid of Cransons' Silver Creek Roller Buckwheat Shucker. This is a fact which we can demonstrate to any miller who will write us.

G. S. CRANSON & SON, Silver Creek, N. Y.

FOR SALE!!

Nine full set of the celebrated Stevens rolls, made by the John T. Noye Mfg. Co., Buffalo, N. Y. Six of them were sent to the Commercial Mills, Detroit, Mich., in December last, but were taken from there without having been put in operation, or having been touched by fire, and our rolls substituted. They were made from the present patterns of the John T. Noye Mfg. Co., and have their late so-called Holt belt drive (or words to that effect). We will furnish smooth rolls with these machines, or any kind of corrugations, to parties who may object to the Stevens corrugations. Three set we have recently taken from the celebrated Elkhorn Mills, of H. D. Rush & Co., Leavenworth, Kan., where our rolls are being placed. All of these rolls were made at Ansonia, Conn., and are of the same make as those used by the John T. Noye Mfg. Co. We offer these rolls at half list price. Please write for particulars. Respectfully, NORDYKE & MARMON CO., Indianapolis, Ind.

SITUATIONS WANTED.

Advertisements under this head, 25 cents each insertion for 25 words, and 1/4 cents for each additional word. Cash with order. Three consecutive insertions will be given for the price of two.

SITUATION WANTED.

By a miller who understands the "Roller System." Good references. Address, LOCK BOX 84, Niagara Falls, N. Y. 1830

SITUATION WANTED.

By an experienced miller. Have taken charge of grist and flour mills. A first-class stonemason. Good references. Address WM. REED, North Bucksport, Hancock county, Me. 20

WANTED SITUATION.

As first or second miller. Have had eight years experience in both merchant and custom mills. Understand both roll and stone. Can give the best of reference as to morals and ability. Am married. Address B. F. CONKLIN, Dundee, N. Y. 20

SPECIAL ADVERTISEMENTS.

Advertisements of Mills for Sale or Rent, Partners Wanted, Machines for Sale or Exchange, etc., etc., cost 1/2 cents per word for one insertion, or 4 cents per word for four insertions. No order taken for less than 50 cents for one insertion, or \$1 for four insertions. Cash must accompany the order. When replies are ordered sent care of this office, 10 cents must be added to pay postage.

FLOUR MILL FOR SALE CHEAP.

On easy terms of payment; favorably located, within 50 miles of this city, good opening. Address, P. O. Box 2418, St. Paul, Minn. 1828

FOR SALE.

A good water power flour and saw mill, doing a good business. Situated in Western Ohio. Will sell at half value. Address, LOCK BOX 17, Troy, Ohio. 1922

SECOND-HAND TURBINE WATER WHEELS.

Several Leffel water wheels, thoroughly repaired, and in good order. Write for sizes, condition, prices, etc., to JAMES LEFFEL & CO., Springfield, Ohio. 2027

FOR SALE OR RENT.

A three-run tide-water mill, all in good order; good machinery. A bargain for a man with a small capital. Water all the year. C. E. STUDWELL, Bay Port, Conn. 1821

WANTED TO RENT.

A custom mill. Must be in good order, with trade established. New York or Pennsylvania preferred. Address, with full description, I. W. POST, Phelps, Ontario county, N. Y. 1821

WANTED.

A practical mill man for a partner, or will sell a first-class merchant mill, with cotton gin attached. Finest location in America. Address, JOHN ESTES, Abilene, Taylor county, Texas. 1821

FOR SALE OR RENT.

Good water power custom mill in good wheat section, doing good business. Well located for custom and merchant work, with house, barn, and shed. J. D. REEVES, Newark, Wayne county, N. Y. 1922

FOR SALE.

A 50-barrel water power flour mill, situated in best wheat growing section in Ohio, on F. F. W. & C. R. R. Machinery almost new. Good town and good local trade. Twenty-five acres land, two dwellings, stables, plenty fruit, etc. For further information address O. M., in care of THE MILLING WORLD. 1481

PARTNER WANTED.

Or would sell. Capital needed to develop business of first-rate fifty barrel steam roller mill, well located in western New York. Large custom and local trade. An exceptional chance for the right man. Apply, HUME & SANFORD, Real Estate Agents, 16 West Swan Street, Buffalo, N. Y. 2028

A BARGAIN.

One 16-inch under-runner, full iron frame, middlings mill, made by C. C. Phillips, Philadelphia. It is brand new, has never been used, and will be sold at a big bargain as I have now no use for it. Address C. 91, care THE MILLING WORLD, Buffalo, N. Y. 18

YOU CAN BUY THESE CHEAP.

Three McCully Corn Cob Crushers. The above articles are brand new, in perfect condition, just as they left the factories, and will be sold very cheap for cash. Address S. 30, care THE MILLING WORLD, Buffalo, N. Y. 18

FOR SALE CHEAP.

One 6-horse power engine and 10-horse power boiler, all complete, price, \$350; one 8-horse power engine and 10-horse power boiler, price, \$375; one 10-horse power portable complete, price, \$350; one 10-horse power Russell Traction, price, \$500; one 4-horse power vertical engine, price, \$120. Call or address for particulars EZRA F. LANDIS, Lancaster, Pa. 2022

MILL FOR SALE.

Building 48x150, four stories; four run burrs; one set Allis rolls; latest improved cleaning machinery; double engine, 40-horse power each; capacity 120 barrels. Located on railroad switch. Good shipping facilities. Built in 1879, and in first-class order, doing a good custom and local trade. Will sell at a bargain. For particulars address, MERCHANT MILLS, Brownstown, Fayette county, Ill. 1922

FOR SALE.

A four-run New Process water power flouring mill, and 100 acres of very choice land; 40 acres of young timber. Situated in Colfax county, Neb. Mill in good repair. A never-failing water power. All facilities for making first class flour. A good chance to do a first-class paying business. Owners desire to go into other business. This property will be sold at half its cost. Address, J. A. GRIMISON, Schuyler, Colfax county, Neb. 1716

A GENUINE BARGAIN.

I offer for sale my 8-run, water-power mill, together with between eight and ten acres of land, four houses and a saw mill, (the latter not in operation.) The property is in a village of 1,800 inhabitants, in a fine and rich agricultural section. Everything is in good repair except the saw mill. Flour mill is located within 30 rods of railroad station, and my retail trade ranges between 60 and 80 car-loads per year. I offer the entire property for \$10,000. Excellent reasons for desiring to sell. Address, if you mean business, "MILLER," care THE MILLING WORLD, Buffalo, N. Y. 1821



PUBLISHED EVERY THURSDAY BY
THE AMERICAN INDUSTRY PRESS,
 (LIMITED.)

OFFICES, LEWIS BLOCK, SWAN STREET,
 BUFFALO, N. Y.

G. B. DOUGLAS, - - Managing Editor.
 THOS. McFAUL, - - General Agent.

SUBSCRIPTION.

In the United States and Canada, postage prepaid, \$1.50 Per Year, in advance; can be remitted by Postal order, registered letter, or New York Exchange. If currency is enclosed in unregistered letter, it must be at sender's risk.

To all Foreign Countries embraced in the General Postal Union, \$2.25 Per Year, in advance.

Subscribers can have the mailing address of their paper changed as often as they desire. Send both old and new addresses. Those who fail to receive their papers promptly will please notify at once.

ADVERTISING.

Card of Rates sent promptly on application. Orders for new advertisements should reach this office on Tuesday morning, to insure insertion in the week's issue. Changes for current advertisements should be sent so as to reach this office Saturdays.

EDITOR'S ANNOUNCEMENT.

Correspondence is invited from millers and millwrights on any subject pertaining to any branch of milling or the grain and flour trade.

Correspondents must give their full name and address, not necessarily for publication, but as a guarantee of good faith.

This paper has no connection with any manufacturing or mill furnishing business. Its editorial opinions cannot and will not be influenced by a bestowal or refusal of patronage. It has nothing for sale, but its space to advertisers and itself to subscribers.

Entered at the Post Office, at Buffalo, N. Y., as mail matter of second-class.

MILLERS' ASSOCIATIONS.

NATIONAL.....S. H. Seamans, Sec'y, Milwaukee, Wis.
 CALIFORNIA.....F. J. Parsons, Sec'y, Oakland.
 ILLINOIS.....C. H. Seybt, Sec'y, Highland.
 INDIANA.....Jos. F. Gent, Pres't, Columbus.
 IOWA.....J. S. Lord, Sec'y, Ogden.
 KANSAS.....O. W. Baldwin, Sec'y, Ottawa.
 KENTUCKY.....W. H. Wherritt, Sec'y, Lancaster.
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 MINNESOTA.....Frank Pettit, Sec'y, Minneapolis.
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 NEBRASKA.....C. D. Smith, Sec'y, Lincoln.
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 TEXAS.....Mitch. Gray, Sec'y, Dallas.
 PENNSYLVANIA.....Landis Levan, Sec'y, Lancaster.
 OHIO.....Robt. Colton, Sec'y, Bellefontaine.
 NEW YORK.....J. A. Hinds, Sec'y, Rochester.

"A MERCHANT'S FIGURES."

A SHORT time ago the Milwaukee *Sentinel* was "favored" with an advertisement from the leading dry-goods house of that city, and directed the attention of its readers thereto in a rather unique manner, but, in doing so, unfortunately placed a weapon in the hands of those who believe the United States would continue to exist, and even prosper, were tariff burdens materially reduced or entirely done away with, except for purposes of revenue. The advertisement was in the form of a price list of domestic goods. The prices at which this firm will supply its *retail* customers are compared with the *jobbing* prices ruling in 1860, twenty-four years ago, and the firm says:

The Waumsutta cottons are somewhat better quality, but the New York Mills cottons are very greatly improved from their former quality. White blankets are from 20 to 25 per cent. less for same quality than in 1860. Colored blankets show even a greater difference. We note that the price of wheat in Milwaukee and Chicago in December, 1860, was as low as 68c, and at present it is worth about 78 and 80c. The wages of the mechanic and laboring man are fully 25 per cent. more than in 1860. The above shows that they are far better off and can buy more for a dollar of all manufactured products than they could at any previous time in the history of the country.

Without stopping to verify these statements, and we have no reason to doubt their approximate correctness, let us pass to a brief consideration of the *Sentinel's* remarks. It says:

The tendency of manufactures under a protected system is to a diminished cost together with increased wages to employes. This is seen best in the matter of cutlery. For many years we paid more for our knives than we would have done under a system of free trade, but as the manufacture became established here through the home consumption the price diminished until to-day American cutlery of better quality than the British, can be bought for less than the latter would demand if free of duty. But for the encouragement given to this industry by the protective system, we would to-day buy the inferior foreign articles at higher prices. So with the cottons specified in Chapman's advertisement. In 1860, under free trade, these products sold for less than they did in 1863 and the first years of a protective

tariff—but under this tariff they have reached a lower price than they ever touched under a free trade system and lower than they can be profitably made for in England. The report of the Massachusetts statistical bureau shows that the hours of labor in the cotton mills have been reduced while wages have been advanced.

The italics in this extract are ours. Such of our readers as may be employers of labor, especially in mechanical pursuits, realize how essential to success and profit it is that all raw material entering into their products shall be obtained at the lowest possible cost; that the mechanism by which it is converted into the finished article shall be of the most perfect character; that the power to operate this mechanism shall be economically generated and transmitted, and that all scraps and other unutilized raw material shall be converted into money. This is *business*. Whether margins of profit be large or small, all possibilities of wastefulness or carelessness in these directions are jealously guarded against. This being the case but one avenue of retrenchment is open to the employer of labor when demand for his products is materially curtailed, and that is in the wages paid to his employes. Put a pin here for a moment.

The *Sentinel* says that "under this tariff they (cotton goods) have reached a lower price than they ever touched under a free trade system." It neglects to state that "under this tariff" the cotton mills of New England are shutting down, thousands upon thousands of operatives are being thrown out of employment, and the owners of the mills are fain to see their mills idle, returning no profit from the heavy investments thereby represented. But says the *Sentinel* these goods are selling at a price "lower than they can be profitably made for in England." So the effect of our protective tariff has sufficed to force the values of our manufactured goods below what the same could be profitably produced for by the "pauper labor" of England.

Says the *Sentinel*, "the tendency of manufactures under a protected system is to a diminished cost together with increased wages to employes." There is a good deal of bosh in that sentence. Let us go back to the pin. The *Sentinel* virtually assumes that whatever the employer may be able to save in the cost of raw material, or in operating expenses, he quietly, and as a matter of course, dumps into the pockets of employes in the shape of increased wages. That may be the rule up in Milwaukee but it doesn't hold good down in this section of the footstool. On the contrary any drop in the cost of raw material is accepted as evidencing a degree of weakness in the market, and if it appears that such weakness may spread to other lines of industry, then retrenchment is contemplated and takes form, almost invariably, first in a readjustment of wages. For a period of nearly, or quite, two years values of all, or nearly all, manufactured articles have been steadily declining, a result, by the way, which, with the *Sentinel*, we are quite ready to admit has been brought about by our protective tariff, until they have passed below the point at which profit inures to the producer. We have had none of the products of foreign "pauper labor" to contend against, but have quietly gone, on, under a heavy protective tariff, until our markets are absolutely glutted with goods for which there is no demand, although as the *Sentinel* very complacently remarks prices are "lower than they can be profitably made for in England."

THE BUSINESS FUTURE.

Previous to our wheat harvest the probable yield was widely speculated upon, and as prospects for abundance brightened speculations as to the effect upon business were freely indulged in, and prophecies of a boom in trade and financial circles were not wanting. It was assumed that a heavy demand

would be made upon us by foreign countries; that our transportation facilities would be heavily taxed to move our wheat to the seaboard, while eastern monied institutions would find profitable employment for their capital in the purchase of this grain from the western producer. By many the possibility of abundant harvests abroad was seemingly lost sight of; it was simply sufficient that our crops should be large to insure the setting in of a boom greater than this country had ever experienced. We have the wheat crop, one of exceptional size and quality, and, from every present indication, shall have the corn crop, but, alas, we have thus far failed to lay hands on the "boom."

Is this boom essential to our prosperity? We think not. The zeal with which its coming was prophesied imbued many with the impression that it was just on the eve of appearing, and this impression has been productive of bad results. The first offerings of new wheat came forward with considerable freedom, but prices were below what many deemed a remunerative figure, and just as it was anticipated, that our railroads would find employment, receipts at country elevators began to fall off and the non-materialized "boom" was knocked in the head, poetically speaking. We were then sagely assured that the farming community had the ability to hold the grain and insist on better prices, and that this policy would be pursued. This appears to have been an erroneous impression, at least that portion of it which predicted the withholding of wheat from market. The farmer has apparently come to his senses and we note a considerable increase at various points in wheat receipts. Prices do not evidence any immediate likelihood of advancing nor does it appear probable that they will go appreciably lower than present quotations. It has at last become apparent that we can find ready market for our surplus but only at reasonable, or, perhaps low, prices, and, as a sensible people, we are bound to accept the situation and make the best of it, and this "best of it" is by no means bad.

We are not of those who believe high prices are essential to national prosperity. We have had an era of high prices, but, as a rule, the average wage earner is no better off than he would have been had low prices for labor, coupled with low prices for the commodities he was obliged to purchase, prevailed. If we, as a people, can divest our minds of the idea that high prices for our products are necessarily concomitants of profit and prosperity then we shall again enter upon a period of good times. It is time that this matter be looked carefully into; are markets are to-day stocked with goods the selling price of which is, in very many instances, materially below cost of production; much of these goods represent comparatively high-priced raw material, and are the result of somewhat high-priced labor. These goods could to-day be produced for less expenditure, except in the single item of labor, than they originally cost; the tendency is downward but this does not by any means indicate continued depression; on the contrary it, to us, is indicative of returning prosperity. We are beginning to deal with real instead of fictitious values, and so soon as we can reduce accumulated stocks of merchandise just so soon will the wheels of industry again begin to turn. Our farmers must sell their produce, and with the returns therefrom liquidate maturing obligations, make needed improvements, and buy such commodities as even their fertile acres cannot produce. Money will, *must*, circulate, and it is entirely within reason to anticipate a more than moderate improvement in all classes of business during the ensuing fall and winter. We are "bears" on high prices and large profits, but "bulls" on business improvement from now on. Our millers

are bound to have prosperous times. Low prices for wheat signify cheap flour, and cheap flour is a necessity just now and, for some time, will be. Wages, when manufacturing operations are again actively resumed will not rule as high as in the past, and cheap food will be essential to comfort of those dependent upon the mechanic's earnings. Fortunately cheapness is assured, and that too without entailing loss upon the producer of this food. Banks may fail, speculators come to grief, railroad corporations pass dividends, but our immense harvests of cheap breadstuffs may be relied upon to give stability to honestly conducted business enterprises.

HAVE you noticed how few failures and embarrassments have been recorded among millers during the dull season through which we are passing? There have been some, of course, but their number has been small. Stop for a moment and consider what vast sums have been paid out during the past ten years by the millers of this country for improvements in their establishments. Nobody knows what the aggregate is but it has been sufficient to place scores of manufacturers of milling machinery on a substantial financial footing, and we do not know that damage has been sustained by the millers by the course they have pursued. On the contrary they have been profited, else we should hear of failures and embarrassments in the trade. It may be safely set down that flour manufacture is a reasonably profitable and more than ordinarily safe business. It may be overdone, and undoubtedly is to some extent, but it has a faculty of coming out in reasonably good shape, and few wrecks mark the path of its progress.

THE St. Louis *Globe-Democrat* says: "Mr. E. O. Stanard would make a good candidate for Congress in the Ninth District." That's a very brilliant discovery. Of course he would. He'd make not only a good candidate but a good congressman. Isn't he a miller? What other qualifications should he possess to satisfy the denizens of the Ninth District? Here's a pointer for the people of St. Louis, and particularly for the people of the ninth congressional district. Nominate Mr. Stanard and elect him then you can say that St. Louis is such a center of flour manufacture that it would be impossible to find anyone capable of representing your interests, who was not in some way identified with flour manufacture.

THOSE of our readers who are interested in the subject of dust collecting, and which of them is not, by sending a request to the Milwaukee Dust Collector Manufacturing Co., Milwaukee, Wis., will receive a very handsomely gotten up, profusely illustrated and elaborate treatise upon the subject. The book must have cost a great deal of money, contains a vast amount of information about a subject but imperfectly understood by the large majority of millers, and, while primarily issued to describe the Prinz dust collector, it possesses intrinsic value as a technical work. Our advice is to send for it, and preserve it when you get it.

AMONG the exhibitors at the St. Louis Exposition we note the following well known mill-furnishers, viz:

Howes & Ewell, Silver Creek, N. Y.
 R. L. Downton, St. Louis, Mo.
 Smith Middlings Purifier Co., Jackson, Mich.
 Case Manufacturing Co., Columbus, O.
 W. H. Forman Flour Mill Mfg. Co., St. Louis, Mo.
 Todds & Stanley Mill Furnishing Co., St. Louis, Mo.
 Ewd. P. Allis & Co., Milwaukee, Wis.
 Stilwell & Bierce Mfg. Co., Dayton, O.
 O. E. Brown Mfg. Co., Grand Rapids, Mich.
 Richmond Mfg. Co., Lockport, N. Y.
 Portable Iron Roller Mill Co., Chicago, Ill.
 Willford & Northway, Minneapolis, Minn.

The displays of each of these firms are very attractive and will undoubtedly receive the attention of every visiting miller.

ESTABLISHED 1856.

EUREKA GRAIN CLEANING MACHINERY | GENUINE DUFOUR BOLTING CLOTH

OVER 18,000 MACHINES IN USE.

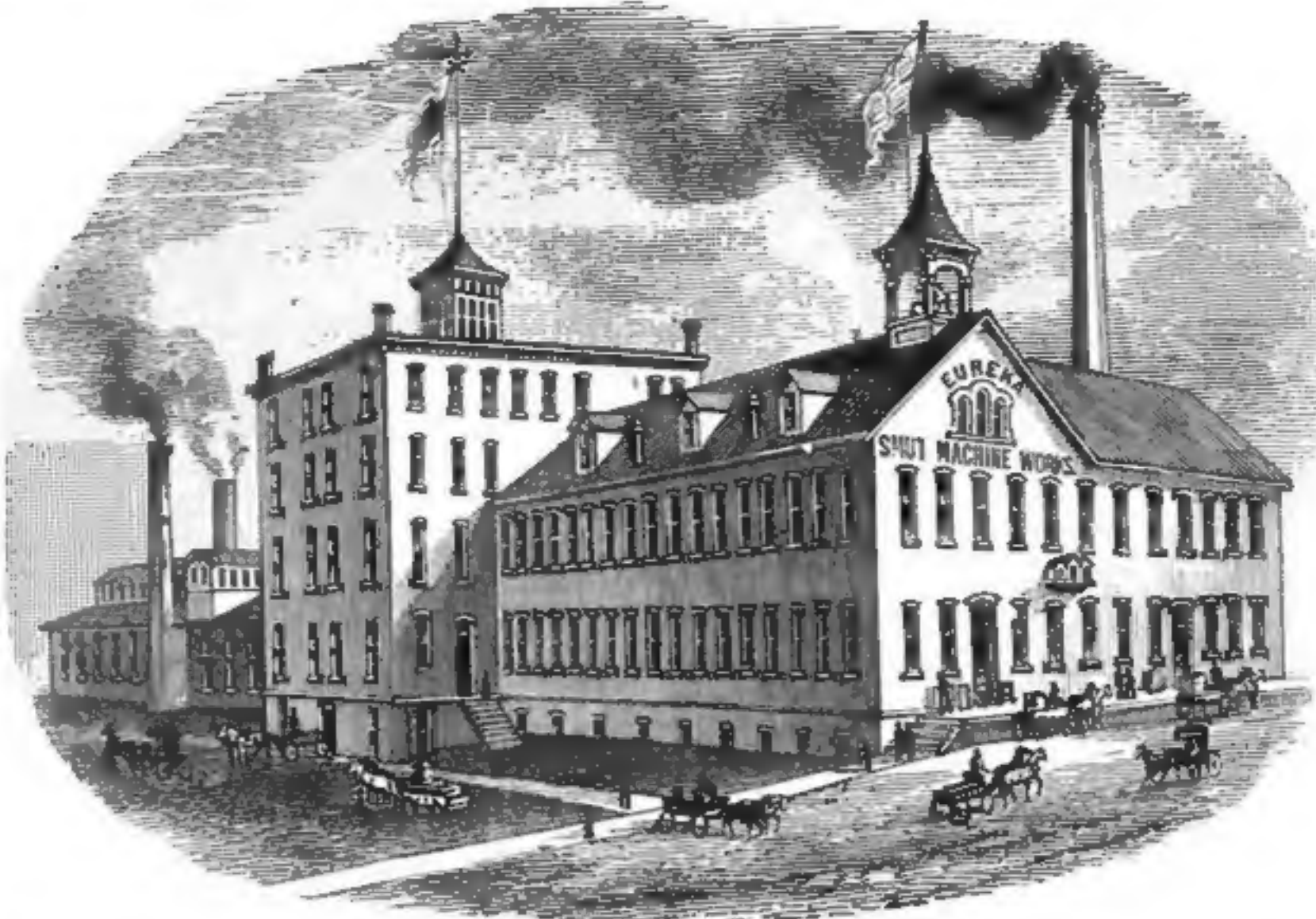
OUR LINE COMPRISES

The Eureka Separator,
The Eureka Smutter and Separator,
Eureka Brush Finisher,
The Eureka Magnetic Automatic Separator,
Silver Creek Flour Packer.

Our establishment is the oldest, the largest and most perfectly equipped of its class in the world, and our machinery is known and used in every country where wheat is made into flour.

HOWES & EWELL,
SILVER CREEK, N. Y.

European Warehouse and Office: 16 Mark Lane, London, E. C. England.
Gen. Agency for Australian Colonies and New Zealand.
Thos. Tyson, Melbourne, Victoria.



We handle this justly celebrated cloth in large quantities, and can fill all orders upon receipt. For such as may prefer a cheaper grade, we offer our

ANCHOR BRAND BOLTING CLOTH.

Guaranteeing it to be equal in every particular to any other cloth on the market, except the Dufour. We have handled it for years, have sold thousands of yards of it, and know it will fully sustain our representations.

Send For Samples of Cloth, Our Style of Making Up, and Prices.

HOWES & EWELL,
SILVER CREEK, N. Y.

ODELL ROLLER MILLS

ARE MADE ONLY BY
STILWELL & BIERCE MFG. CO., DAYTON, O.

PATENT MILLSTONE CEMENT

Invaluable to Millers for Repairs and Seams in French

This is a new article of manufacture, and is common use by millers. It is much cheaper, son. It is perfectly harmless, containing nature and attains the hardness of French only fills the cavity, but adheres to and be-grinding. Good Millstones are now in use, composed entirely of this preparation. The



ing and Filling the Joints, Cavi-Burr and other Millstones.

greatly superior to the preparations now in and can be applied by an inexperienced per-soning of a poisonous nature. It has the Burr Stone, wears evenly with it, and not comes a part of the Stone, and assists in

LEADING MAKERS ARE ADOPTING IT TO BUILD THEIR MILLSTONES.

For miller's use, it is put up in cases of about 50 lbs. Price per case, \$5.00.

We cannot open an account for so small a sum, therefore Cash should be sent with order otherwise we shall send C. O. D. by Express, collecting for return of the money.

For manufacturers, we furnish in bbls. of 300 lbs. Price upon application.

Emery Rub Stones, for hand use in Finishing the Furrows and Faces of Millstones.

Union Stone Co., 38 & 40 Hawley Street, **Boston, Mass.**

Union Emery Wheels, Emery Wheel Machinery and Tools a Specialty. Wooden Pol-ishing Wheels, Grinders' and Polishers' Supplies. Catalogue on Application.

EMERY, QUARTZ, CORUNDUM.

GOVERNORS { For Water } Cohoes Iron Foundry & Mch. Co.
Wheels } Send for Catalogue. Cohoes, N. Y.

LORD BALTIMORE HOMINY MILL.

PATENTED SEPT. 28, 1880, AND JULY 26, 1881.

The Best, Most Durable, and Most Economical Machine.

The Lord Baltimore Hominy Mill is no experiment, but is in constant use and giving unexampled results in several large mills. Its capacity is greater than that of any other hominy machine, being from three to five barrels of Hominy per hour, and in preparing the corn for Grits, Pearl Mill or Corn Flour, five to six barrels per hour. It is built of the best materials. The various cages are composed of an aggregation of staves, so that in case any of the staves are broken, they may be easily repaired with little trouble or cost.

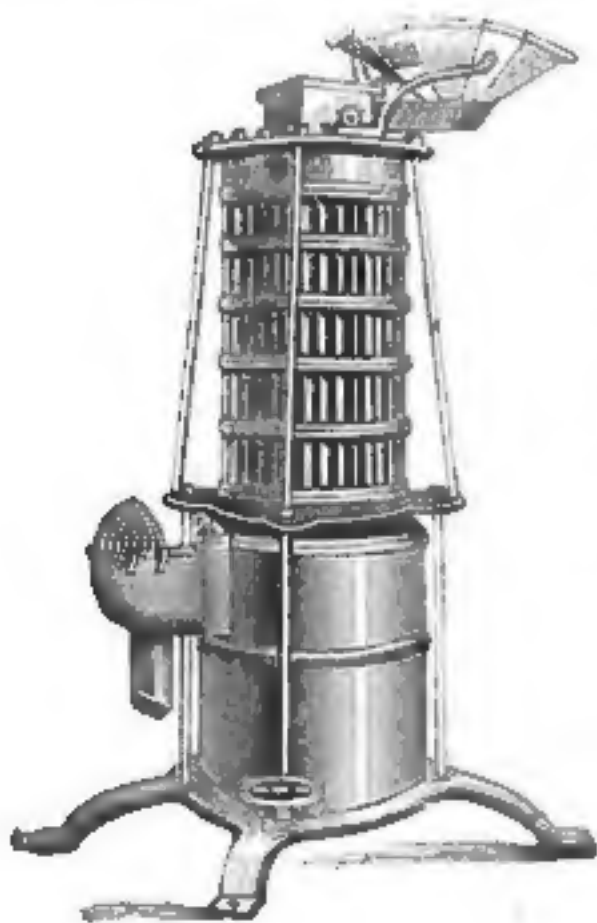
For Prices, and further particulars, address
C. S. DAY, Patentee & Manufacturer, KENT ISLAND, MD.

Please address all orders for Castings and Hullers to:

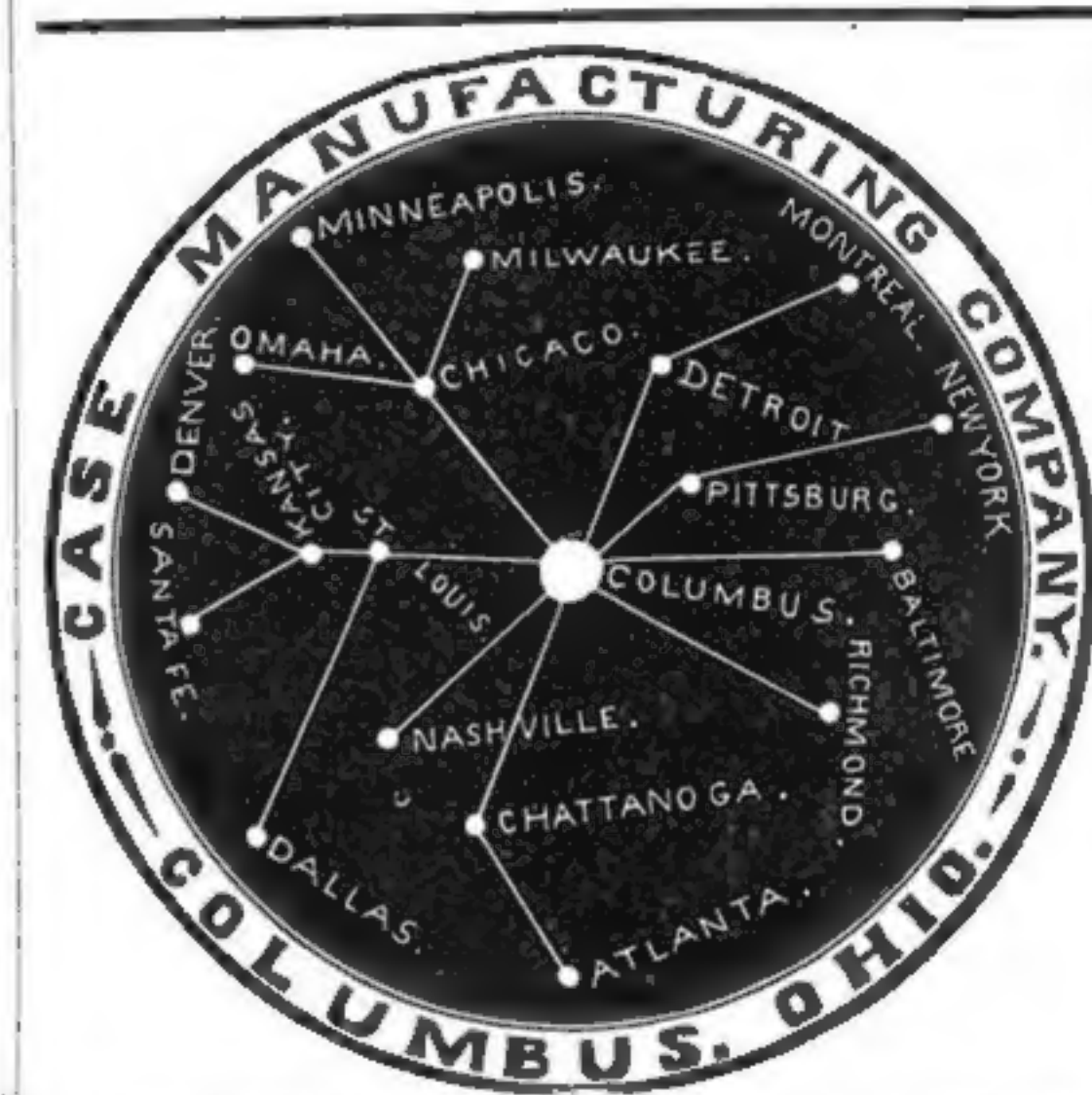
JAMES McMILLAN,

Nut Washer and Bolt Manufacturer and Machinist,

151 NORTH STREET, BALTIMORE, MD.



THE CASE MACHINERY.



The Shipping Facilities of Columbus are Unexcelled by those of any city in the country. We are always able to Obtain the Lowest Possible Freight Rates.

Because we make our-selves (and do not have to buy outside and pay a manufacturer's profits) nearly every machine that goes into gradual reduction milling, we are able to put our line to the miller at less cost than those who have a large part to buy from other manufacturers.

Our line, too, is adapted each machine to the other, so that capacity, size, power, cost, etc., are all equal-ized throughout the entire mill, including iron-work, millwrighting, belting, bolting, etc. We can give you at lowest cost as good a gradual reduction mill as can be built. Our machinery for large mills is just as successful as for small.

CASE MANUFG. CO.
COLUMBUS, - OHIO.

THE BRADFORD MILL CO.

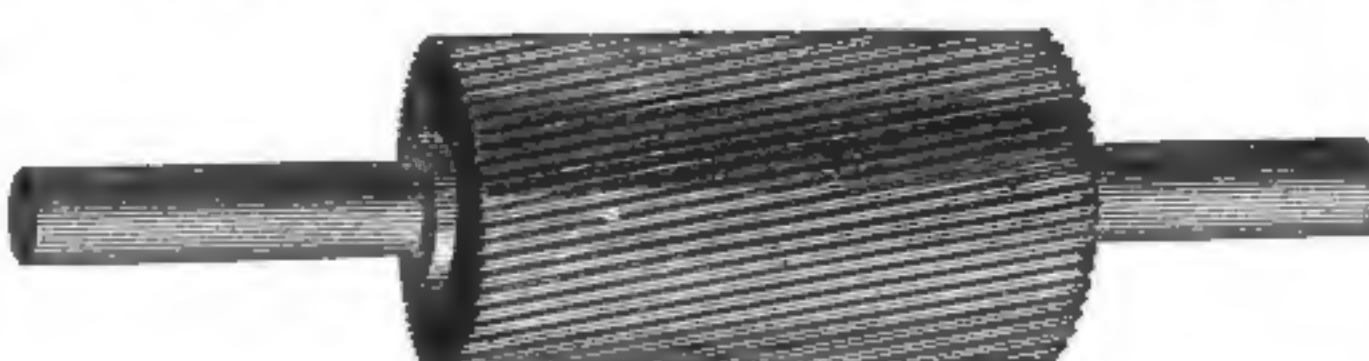
Manufacture a Complete Line of

FLOUR MILL MACHINERY,

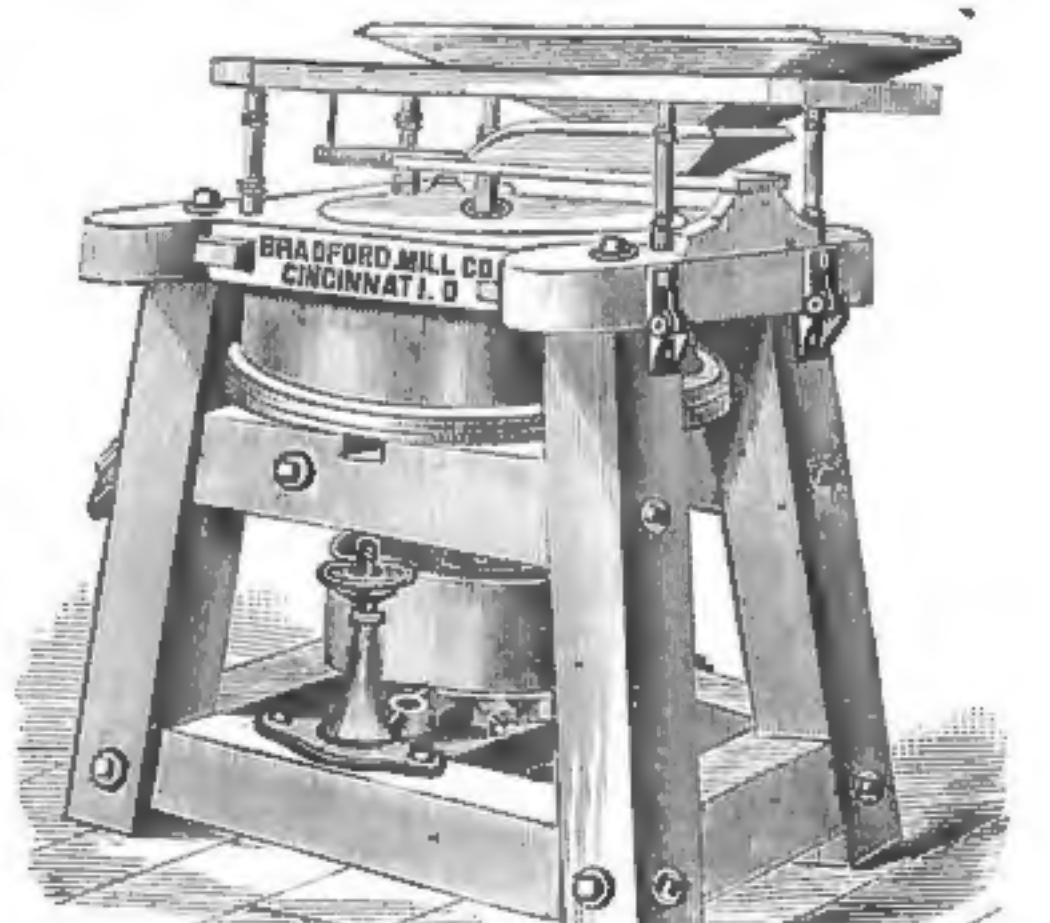
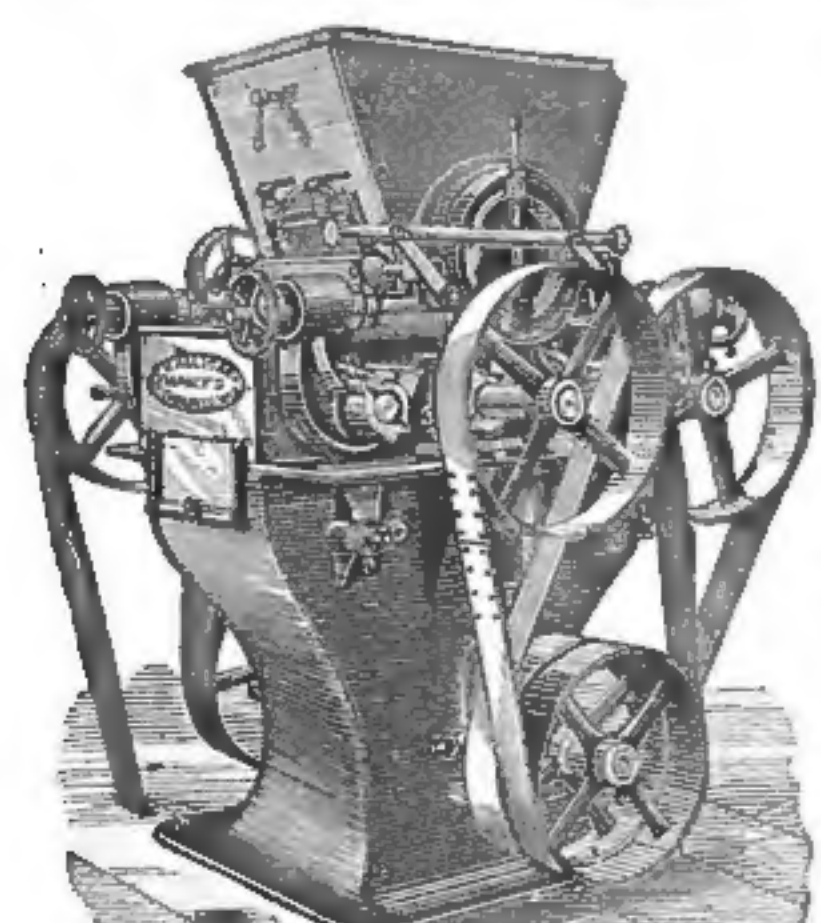
Including Portable Corn and Middlings Mills.

RE-GRINDING AND RE-CORRUGATING

PORCELAIN
ROLLS
RE-GROUND.



CHILLED IRON
ROLLS
Re-Ground and Re-Corrugated.



EIGHTH AND EVANS STREETS, - CINCINNATI, OHIO.



BOLTING APPARATUS.

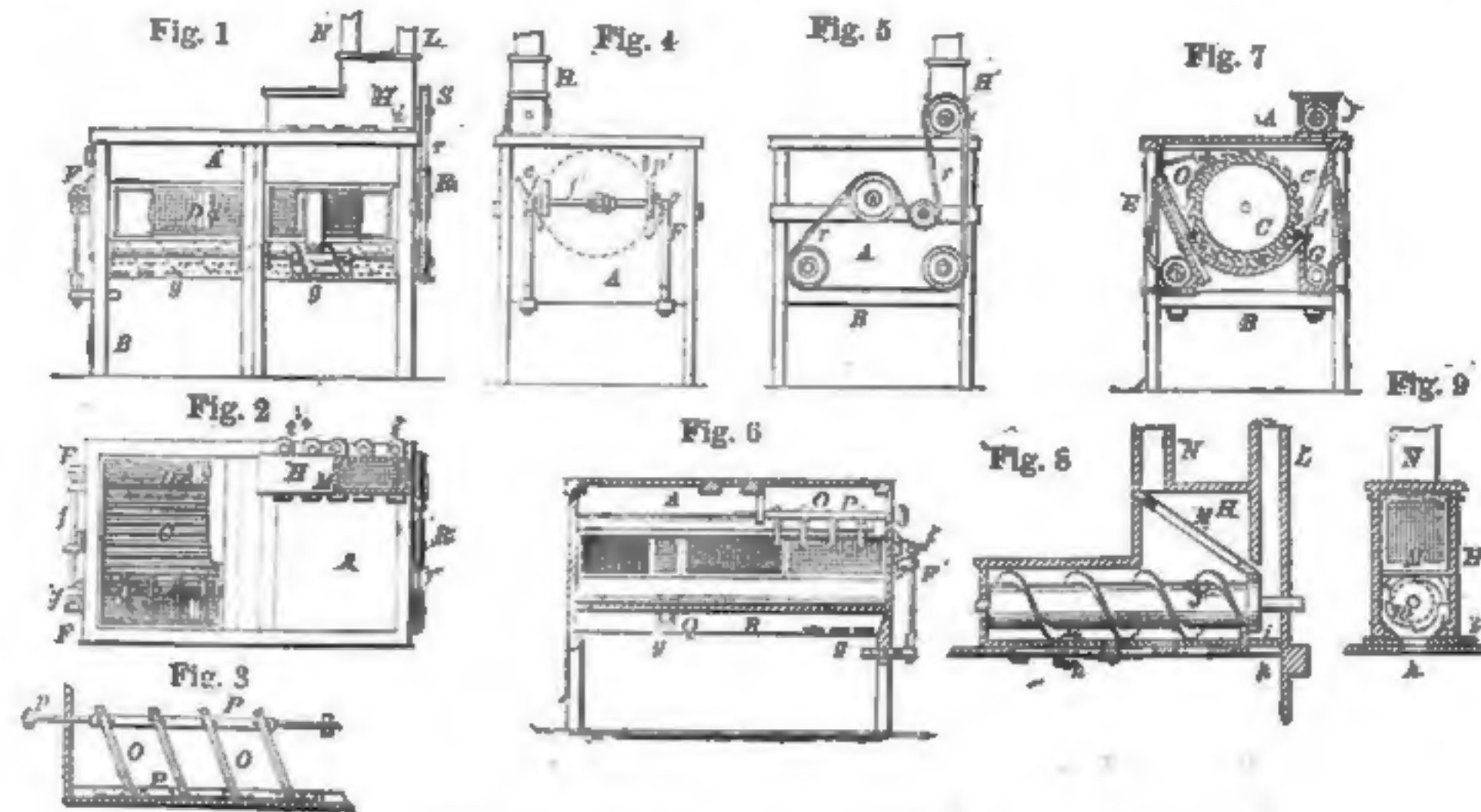
Letters Patent No. 304,139, dated August 26, 1884, to Charles J. Shuttleworth and Orville M. Morse, of Springville, New York, assignors, by mesne assignments, to the Knickerbocker Company, of Jackson, Mich. This invention relates to improvements in that class of bolting apparatus in which an inclined bolting-surface is employed in connection with an elevating mechanism, whereby the material to be bolted is elevated from the bottom of the case and delivered near the upper end of the inclined bolting-surface, over which the material is caused to pass a great many times during the operation of bolting. In the accompanying drawings, consisting of three sheets, Figure 1 is a side elevation of the improved machine. Fig. 2 is a top plan view thereof with a portion of the cover removed. Fig. 3 is a detached view showing the deflecting-boards in an oblique position. Fig. 4 is an elevation of the tail end of the machine. Fig. 5 is an elevation of the head end of the machine. Fig. 6 is a longitudinal section of the machine. Fig. 7 is a cross section in line *x x*, Fig. 2. Fig. 8 is a longitudinal section of the feed mechanism on an enlarged scale. Fig. 9 is an end view of the device whereby the screen of the feed mechanism is agitated. This device has been elaborately described in previous issues of THE MILLING WORLD so that in this connection a presentation of the claims covering new combinations and improvements will be all that is necessary. These are as follows. In a bolting apparatus, the combination, with an elevating mechanism, of an inclined bolting-surface facing the elevating mechanism, and composed of two or more sections of different degrees of fineness arranged side by side, a feed mechanism whereby the material to be bolted can be introduced into the machine at a greater or less distance from the head thereof, and mechanism whereby different grades of material which are sifted through the inclined bolting-surface can be removed separately, substantially as set forth. In a bolting apparatus, the combination, with an elevating mechanism and an inclined bolting-surface composed of two independent sections arranged side by side, of a feed mechanism and a separating-screen whereby the coarse bran is separated and conducted to the head of the first section of the bolting-surface, together with the reground middlings, and the material passing through the screen is admitted to the machine at the head of the second section of the bolting-surface, substantially as set forth. In a bolting apparatus, the combination, with an elevating mechanism, of an inclined bolting-surface facing the elevating mechanism, and deflecting-boards whereby the motion of the material through the machine is regulated, substantially as set forth. The combination, with the elevating mechanism C, of the inclined bolting-surface D, composed of two sections arranged side by side, and the spout Q, receiving the material bolted through the tail portion of the head-section, substantially as set forth. The combination, with the elevating mechanism C, of the inclined bolting-surface D, the feed-chamber H, provided with a series of discharge-openings in its bottom, and the conveyer J, arranged on the bottom of the feed-chamber H, substantially as set forth. The combination, with elevating mechanism C and inclined bolting-surface D, of the feed-chamber H, screen M, arranged in said chamber, the opening A, which admits the tailings of the screen to the head of the machine, the conveyer J, re-

ceiving the material which passes through the screen, and one or more discharge openings, A', substantially as set forth.

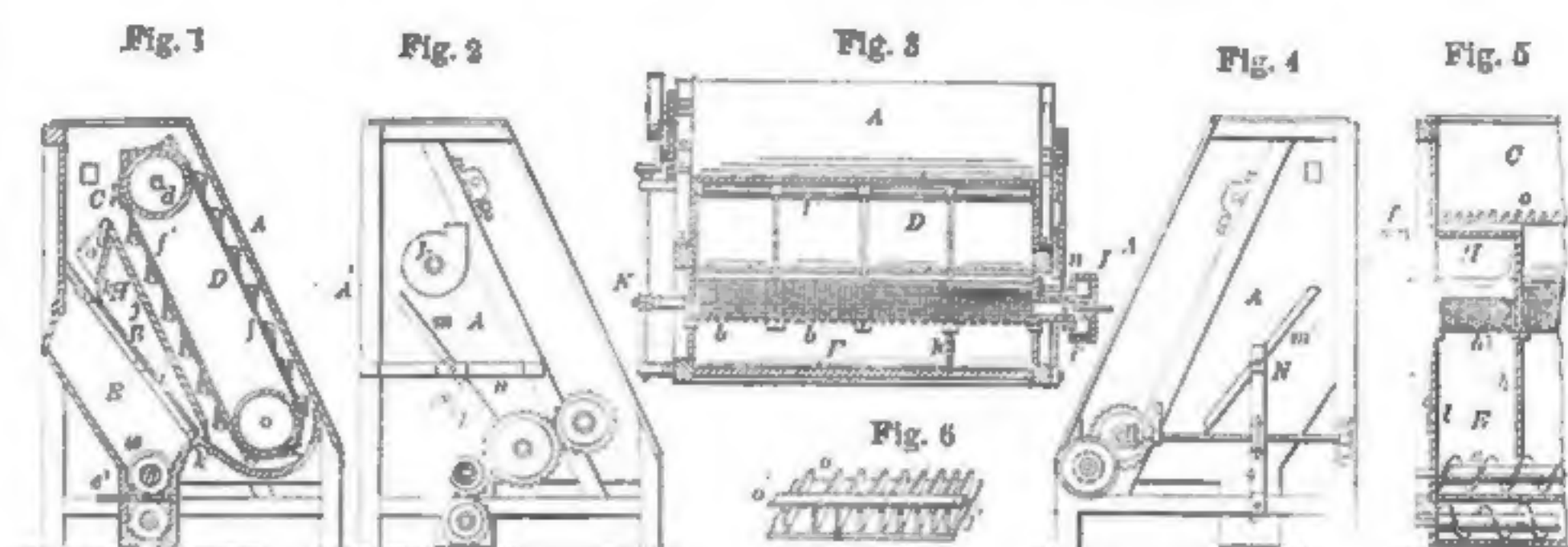
BOLTING APPARATUS.

Letters Patent No. 304,223, dated August 26, 1884, to Orville M. Morse, of Jackson, Mich., assignor to the Knickerbocker Company, of same place. This invention also relates to an improvement in that class of bolting or separating machines which are composed of an inclined sieve and an ele-

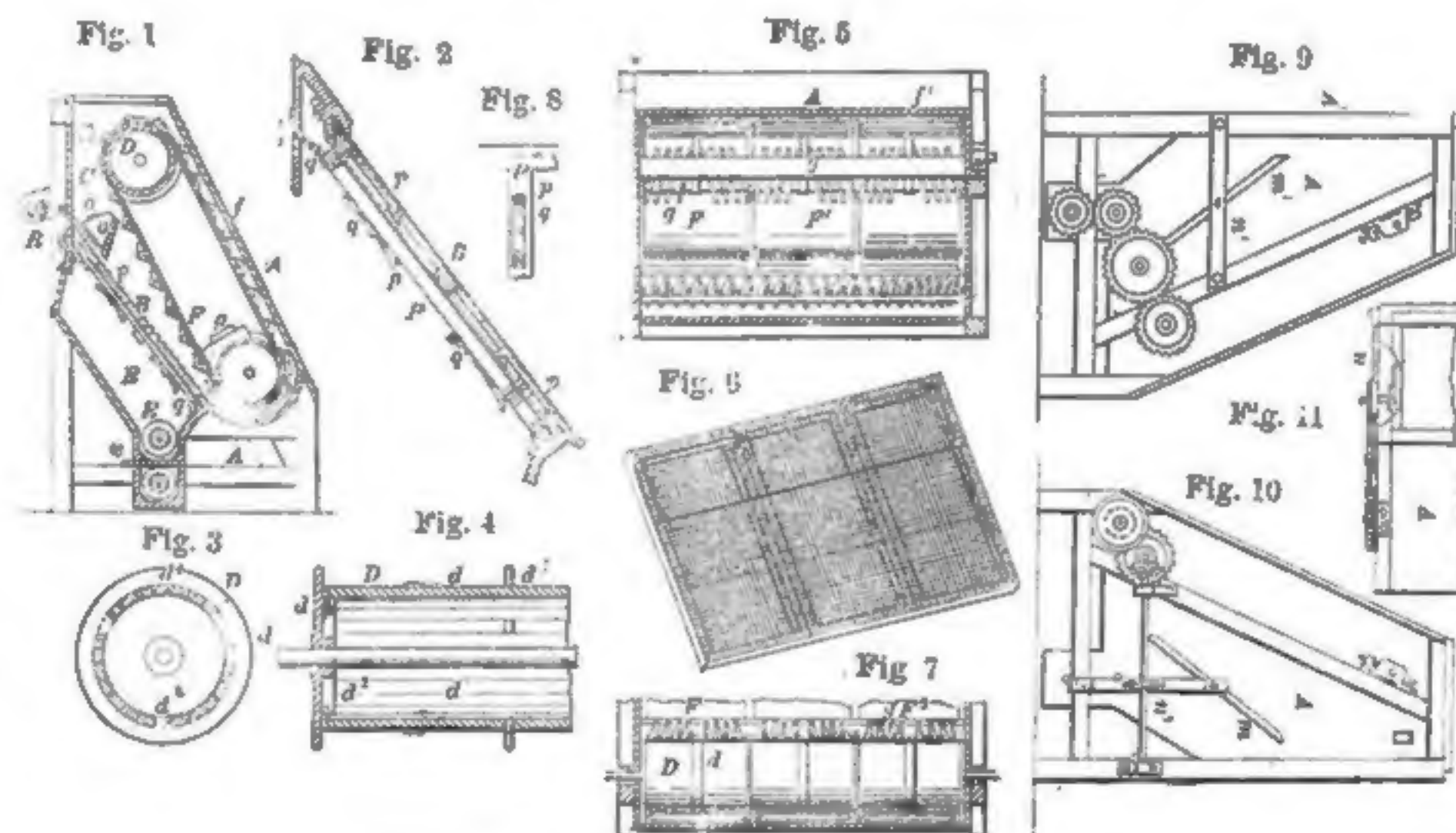
such a manner that an air-current can be directed through the inclined sieve or a portion thereof. In the accompanying drawings, Figure 1 is a vertical cross-section of improved machine. Fig. 2 is an elevation of the tail end of the machine. Fig. 3 is a horizontal section. Fig. 4 is an end elevation of the feed end of the machine. Fig. 5 is a vertical section of the tail end of the machine. Fig. 6 is a front elevation of the deflecting-boards. The machine represented in the drawings, being provided with a



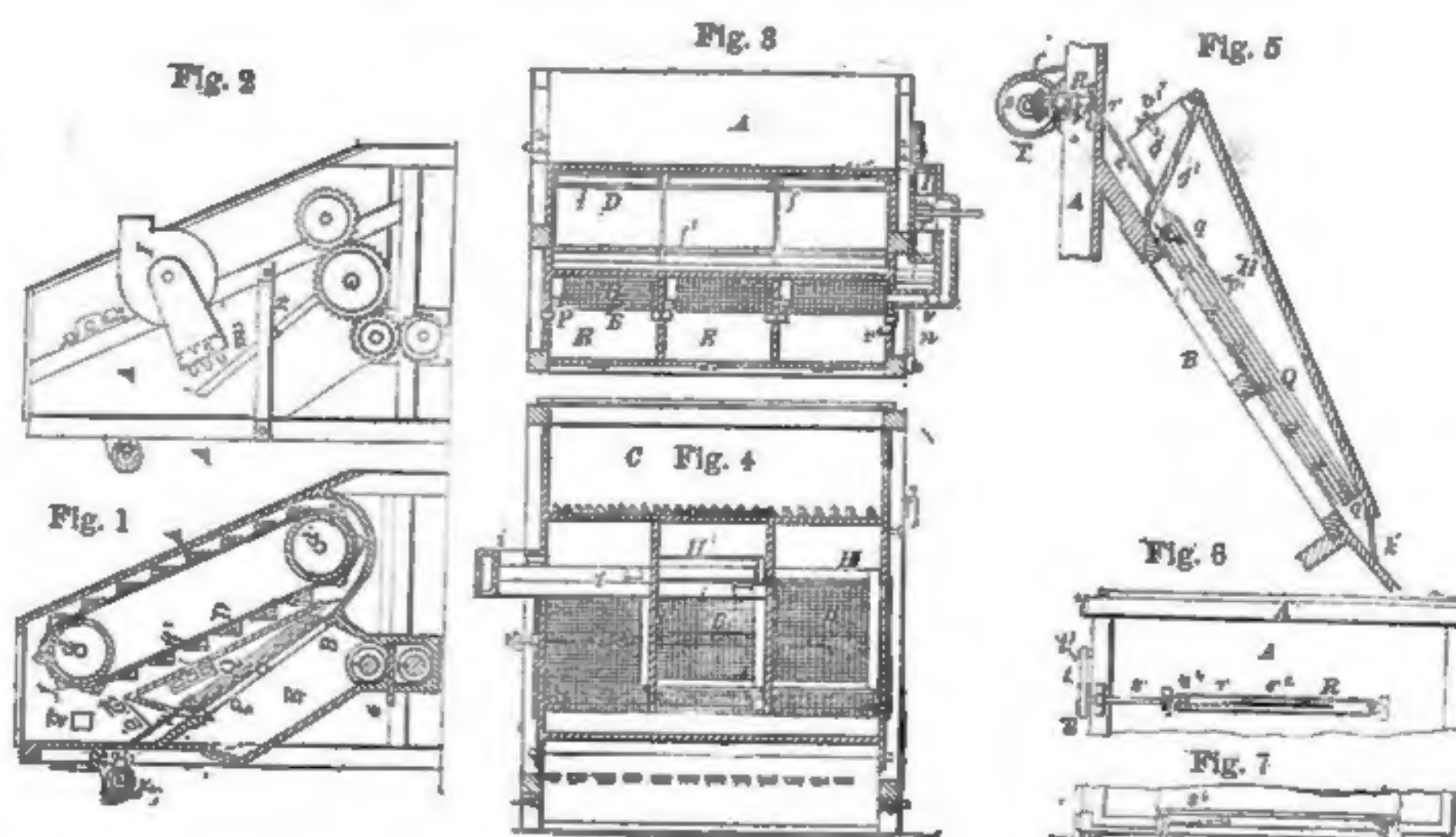
PATENT NO. 304,139. BOLTING APPARATUS.



PATENT NO. 304,223. BOLTING APPARATUS.



PATENT NO. 304,224. FLOUR BOLT.



PATENT NO. 304,225. MIDDINGS PURIFIER.

vating mechanism, whereby the material which has passed over the sieve and escaped from the lower end thereof is elevated and delivered upon the upper end of the sieve, and in which the material is at the same time caused to move gradually across the sieve, so that the material is repeatedly elevated and caused to flow over the inclined sieve in passing through the machine. The object of the invention is to adapt the machine, partly or wholly, to the purification of middlings, by organizing the machine in

screen and air-trunk drawing an air-current only through the coarse portion of the screen, is especially adapted to the bolting of meal and the purification of middlings at one operation or for the dusting and purification of middlings at one operation. The material, consisting of middlings, flour, bran, and impurities, is elevated from the rounded bottom of the meal-chamber C and caused to flow repeatedly over the inclined screen. In passing over the finer portions of the screen the flour is bolted

through the screen and separated from the middlings, bran, and impurities which remain in the meal-chamber. When the flour has been thoroughly removed, the middlings, etc., reach the coarse section *b* of the screen, through which the air-current passes in an upward direction. This air-current operates to remove the light impurities, while the purified middlings are bolted through the section *b* of the screen. The light impurities are carried off with the air-current through the spout *s* and fan I, and the bran and heavier impurities are tailed off through an opening formed in the end wall of the casing A, near its bottom, at the tail end of the machine. By properly adjusting the deflecting-boards the material can be retained on the coarse section or purifying section of the screen as long as may be necessary in order to effect the desired purification. It is obvious that the air-current may be directed through the screen by a blast-fan instead of a suction-fan, if preferred.

FLOUR-BOLT.

Letters Patent No. 304,224, dated August 26, 1884, to Orville M. Morse, of Jackson, Michigan, assignor to the Knickerbocker Company, of same place. This invention also relates to an improvement in that class of bolting or separating machines which are composed of an inclined sieve and an elevating mechanism, whereby the material which has passed over the sieve and escapes from the lower end thereof is elevated and delivered upon the upper end of the sieve, and in which the material is at the same time caused to move gradually across the sieve, so that the material is repeatedly elevated and caused to flow over the inclined sieve in passing through the machine. In the accompanying drawings, Fig. 1 represents a vertical cross section of a flour-bolt provided with improvements. Fig. 2 is a cross section, on an enlarged scale, of the inclined screen and wipers. Fig. 3 is a cross section, and Fig. 4 a fragmentary longitudinal section, of the drum at the head of the elevator. Fig. 5 is a horizontal section in line *x x*, Fig. 1. Fig. 6 is a perspective view of the inclined screen. Fig. 7 is a vertical longitudinal section in line *y y*, Fig. 1. Fig. 8 is a fragmentary view of the under side of the wiper-frame. Figs. 9 and 10 are end elevations of the improved machine. Fig. 11 is a plan view of the spring at the end of the screen-frame. We, in this case confine ourselves to a presentation of the claims covering the improvements. They are: 1. In a separator, the combination of a sieve or screen having the proper pitch or inclination to cause the material to flow over it by gravity, and having its mesh increasing in coarseness from its upper end to its lower end, to increase the separating capacity of the screen as the velocity of the material increases, and an elevator whereby the material escaping from the lower end of the screen is returned to its upper end, substantially as set forth. 2. In a separator, the combination of a sieve or screen having the proper pitch or inclination to cause the material to flow over it by gravity, and composed of sections of different degrees of fineness, arranged side by side, each section having its mesh increasing in coarseness from its upper to its lower end, and an elevator whereby the material escaping from the lower end of the screen is returned to the upper end, substantially as set forth. 3. The combination, with an inclined screen, of a series of belt-elevators, arranged side by side, and a belt-supporting drum having annular enlargements or projecting rings arranged in the center line of each belt, whereby each elevator is centered and retained in its proper position, substantially as set forth. 4. The combination, with an endless elevator belt or apron and the drum or pulley around which it runs, of inclined scrapers adapted to move the material toward

the side or end of the drum or pulley, substantially as set forth. 5. The combination, with an endless elevator belt or apron and the drum or pulley around which it runs, of scrapers bearing against said drum or pulley and inclined from the middle toward both ends thereof, substantially as set forth. 6. The combination, with a separating screen, of a cleaner composed of a movable carrier, brushes or wipers loosely attached to said carrier, and a spring whereby each brush or wiper is held in contact with the screen, substantially as set forth. 7. The combination, with a separating screen, of a cleaner composed of a movable frame, P', brushes or wipers ϕ , provided with pins ϕ' and springs g , secured to the frame P' and bearing against the pins ϕ' , substantially as set forth. 8. The combination, with an inclined screen and an elevator whereby the material escaping from the lower end of the screen is returned to its upper end, of deflecting boards arranged more closely together toward the tail end of the machine, whereby the movement of the material toward the tail of the machine becomes more retarded in the same measure as the material becomes less in quantity, substantially as set forth. 9. The combination, with the stationary frame A and inclined screen B, of a knocker, N, a spring, n , secured at its ends to the stationary frame, and a set screw, n' , adjustably secured in said spring, and bearing against the frame of the screen, substantially as set forth.

MIDDLINGS-PURIFIER.

Letters Patent No. 304,225, dated August 26, 1884, to Orville M. Morse, of Jackson, Mich., assignor to the Kickerbocker company, of same place. This invention relates to an improvement in that class of bolting or separating machines which are composed of an inclined sieve and an elevating mechanism, whereby the material which has passed over the sieve and escapes from the lower end thereof is elevated and delivered upon the upper end of the sieve, and in which the material is at the same time caused to move gradually across the sieve, so that the material is repeatedly elevated and caused to flow over the inclined sieve in passing through the machine. The object of the invention is to adapt the machine to the purification of middlings by organizing the

machine in such manner that currents of varying strength can be directed upwardly through the different sections of the screen, in order to adapt the force and volume of the air-currents to the character of the material passing over the different screen-sections. In the accompanying drawings, consisting of three sheets, Figure 1 is a vertical cross-section of a machine provided with the improvements. Fig. 2 is an elevation of the tail end of the machine. Fig. 3 is a longitudinal section on line xx , Fig. 1. Fig. 4 is a longitudinal sectional elevation of the machine. Fig. 5 is a cross-section on an enlarged scale of the screen and wipers. Fig. 6 is a front elevation of the upper part of the machine. Fig. 7 is a top plan view of the same. The middlings to be purified are fed into the meal-chamber C through the spout g , or in any other suitable manner. The middlings are elevated from the bottom of the casing and caused to flow repeatedly over the inclined screen. In passing over the fine screen-section b at the head of the machine the material is subjected to a light air-current, adapted to the separation and removal of the light impurities. The light air-current is caused partly by the close texture of the bolting-cloth, the density of the mass of material flowing over the screen, and the adjustment of the air-current by the slide in the spout i . In flowing over the next coarser section, b' , the material encounters a heavier air-current, by reason of the coarser texture of the cloth, the decreased bulk of the material, and the adjustment of the slide in the trunk i' . A still stronger air-current operates upon the material passing over the next coarser section, b'' , and for the same reason. The purified middlings which pass through the screen are collected in the meal-chamber and discharged separated into different grades, or together, as may be desired. The light impurities are removed by the air-currents, and the bran and heavy residuary material are tailed off through an opening formed near the bottom of the casing at the tail end of the machine. It is obvious that the air-currents may be directed through the screen by a blast fan or fans, instead of a suction-fan, if preferred. The inventor claims: the combination, with an inclined screen composed of sections having different degrees of fineness arranged side by side, of any elevator,

whereby the material escaping from the lower end of the screen is returned to its upper end, means whereby the material is caused to move laterally across the screen from the fine to the coarse sections, and an air-trunk and fan, whereby an air-current is directed upwardly through the screen, substantially as set forth. In a middlings-purifier, the combination, with an inclined screen, of an air-trunk and fan, whereby an air-current is directed upwardly through the screen, of an elevator, whereby the material escaping from the lower end of the screen is returned to its upper end, means whereby a lateral motion across the screen is imparted to the material, and a cleaner operating to keep the screen open, substantially as set forth. In a middlings-purifier, the combination, with an inclined screen composed of sections of different degrees of fineness, arranged side by side, of an elevator, whereby the material escaping from the lower end of the screen is returned to its upper end, an air-trunk and fan, whereby air-currents are directed upwardly through the screen, and means whereby the force of the air-currents which pass through the different sections of the screen can be regulated, substantially as set forth. In a middlings-purifier, the combination, with an inclined

screen composed of sections of different degrees of fineness, arranged side by side, of an elevator, whereby the material escaping from the lower end of the screen is returned to its upper end, a fan, whereby air-currents are caused to pass upwardly through the screen, and a divided air-trunk having adjusting devices for regulating the force of the air-currents through the different sections of the screen, substantially as set forth.

FILLED WITH WONDER.

[From the *New York Sun*.]

He had been at Coney Island all day and was struggling to get his boots off.

"I never (hic) go down to the island," he remarked to his wife, "and look (hic) out over the broad expanse of sea, 'thout being (hic) filled with wonder."

"Filled with what?" she asked.

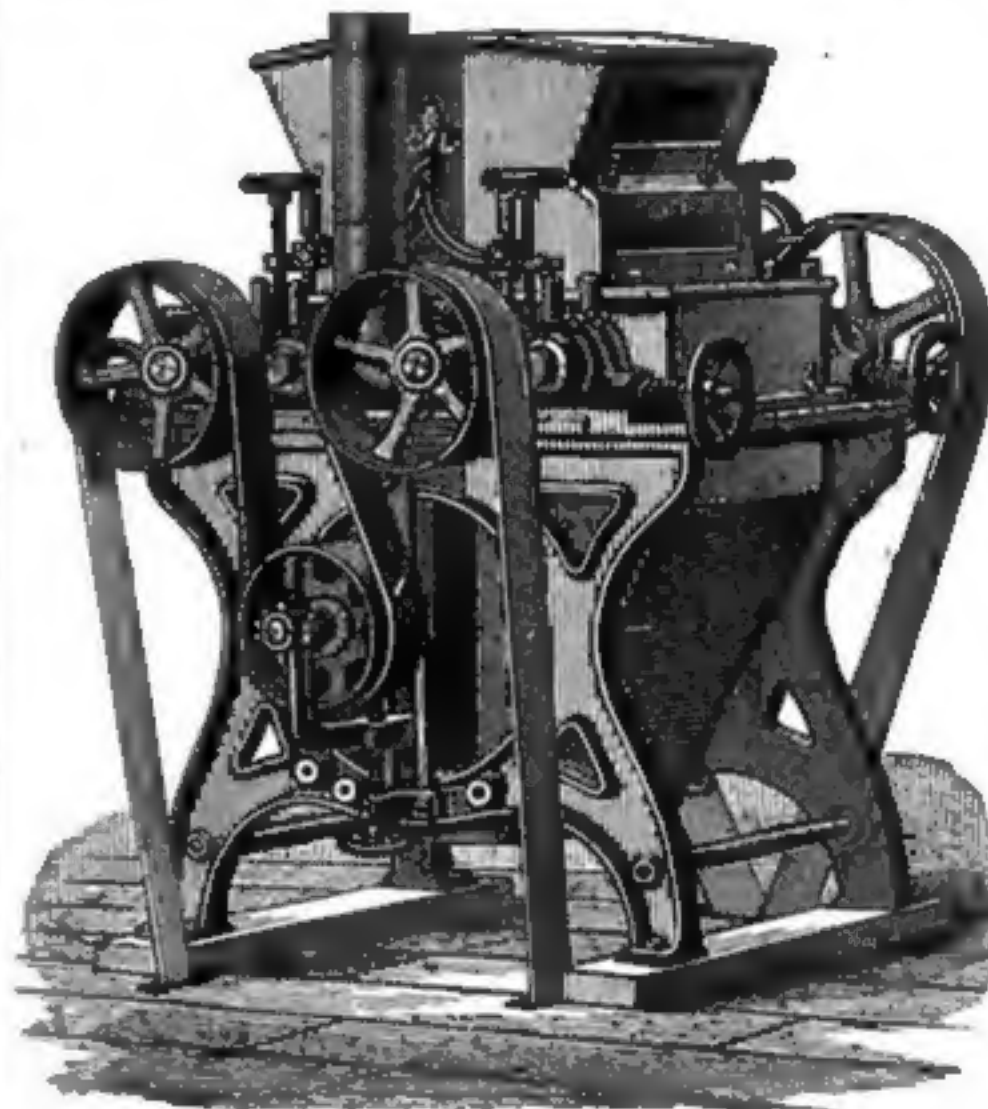
"Wonder."

"Wonder! That's a brand of whiskey I never heard of."

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LUBRICATING OILS.

BELIEVING that a more thorough knowledge of the qualities of the different kinds of lubricating oils that are now being placed upon the market would be of great benefit both to dealer and consumer, and knowing also that the manufacture of mineral oils is still in its infancy, and that comparatively few, even of those in the business, have had the opportunity of personally examining into this matter, we, after careful consideration, have concluded to give the public the benefit of our experience and experiments, as well as that of others who have devoted their time in obtaining a thorough practical knowledge of this subject.

We shall endeavor to point what qualities are indispensable in a first-class lubricant, and also to show many of the so-called lubricating oils are, by burning, cokeing, and by ignorant and inexperienced handling, rendered totally unfit for that purpose, and how such unfitness may be detected. We shall not attempt to enter into a discussion of the relative values of mineral, animal, or vegetable oils as lubricants, further than to cite the opinions of practical men who have made the subject a study, and who, by thoroughly testing, have demonstrated the superiority of the mineral oils.

"An oil destined to be a lubricant, must, above all, comply with the following requisites:"—1st. It must reduce to a minimum the loss of useful labor occasioned by the friction of surfaces lubricated. 2d. It must be technically neutral—that is, contain no "free acids." As these acids attack the metal of the friction surfaces, and in time destroy, instead of preserving the machinery.

"A good lubricant, before anything else, must be oily, without possessing the tendency of thickening; it must furthermore be absolutely constant—that is, undecomposable under the influence of heat, and remain fluid at the lowest temperature of our climate."

"Animal and vegetable oils always contain a greater or less percentage of free, fatty acid; when used, they attack the metal of the engaging surface, and with it form a metallic soap, which contaminates the moving parts, ruins the mechanism, and frequently requires costly repairs, besides increasing the resistance of friction, and thereby causing a large increase in the consumption of fuel."

A committee charged with the task of inquiring into lubricants, submitted the following report to the "Société Industrielle de Mulhouse:"—"We are of the opinion that pure mineral oils are the best lubricants. The use of these oils for lubricating cylinder pistons, is, by far, preferable to that of animal or vegetable oils, since the ruin of the steam apparatus need not be feared so much. The future undoubtedly belongs to the mineral oils, and a product is simply expected, that shall be better than anything in that line at present found in the market."

Mr. J. Veitch Wilson, a high authority on lubricating oils recently read a paper before the Manchester Association of Employers, Foremen and Draughtsmen, from which we take the following extracts:—

* * * Very many standards of lubrication have of late years been placed before the public, some very good, some very misleading. The following list embraces all the properties which for our purpose require to be considered, and is so simple as to be intelligible to any one who has to do with machinery, and sufficient to exclude bad or dangerous oils, and to secure good oils for any one who will be guided by it:—

- 1st—Flash and firing point.
- 2d—Chemical action on metals.
- 3d—Tendency to oxidize.
- 4th—Body.
- 5th—Boiling point, which regulates evaporation and durability.
- 6th—Freezing point.

In my opinion "specific gravity" has no more to do with the lubricating power of an oil than have the phases of the moon. To satisfy you, however, that I am not wrong in disregarding specific gravity as an indication of the value of a lubricating oil, let me refer to the table of specific gravities; you will find water 1,000°; rosin oil, 900°, and sperm oil, 880°. On the specific gravity theory, we should have to consider rosin oil superior to sperm, with which, I presume, you do not agree.

Flash and Firing Point.—I think that oil consumers should, for their own security, insist upon some guarantee of safety in these respects, and taking into account the conditions to which these oils are subjected, I would suggest that these points should be—

For machinery oil, flashing point not under 350° F.

For cylinder oil, flashing point not under 500° F., which in both cases would secure perfect safety.

All animal and vegetable oils contain acids, "and it is worthy of remark that while the natural acidity of animal and vegetable oils can in whole or part be overcome by chemical treatment, their composition is such that by age, or under certain conditions of temperature or friction, their latent acidity is developed. But from whatever cause the acidity proceeds, it is in every case and under all circumstances attended with danger to the machinery with which it comes in contact."

Well refined mineral oils are entirely free from the objection, and although they cannot chemically neutralize the acidity present in animal or vegetable oils, they practically do so by reducing its percentage, and keeping the machinery clean. Purchasers cannot be too careful, therefore, in purchasing compounded oils, to buy only of those whose reputation is such as to guarantee that they are neutralized."

* * * "Again, in referring to cylinder lubrication, Mr. Wilson says; I wish it to be understood that I do not at all question the efficacy of animal and vegetable oils as lubricants pure and simple, but I have endeavored to point out, that from their inherent nature, their use is attended with so many disadvantages and dangers as to render them wholly unsuitable for use, where they are subjected to the action of steam or great heat. Let me now state upon the authority of every chemist who has ever given attention to the subject, that hydrocarbon or mineral oils are absolutely free from all tendency to develop acid, under any condition of temperature or pressure, and from all tendency to oxidize; but if it be true that 'all that glitters is not gold,' it is equally true that all the black oils are not adapted for cylinders; some are little better than the tarry residuum of oil stills. Others so volatile that they are little better than gas, when they come into contact with steam, at even moderate pressure. Others so deficient in body as to be absolutely worthless as lubricants; but I am convinced that if some care be exercised in the selection of the oil, and in its application and use, hydro carbon oil will be found thoroughly efficient as a lubricant."

Cylinder oils must be absolutely free from grit or tar. Tar is usually found in the low class cheap oils with which the market is flooded; and which are, in many cases, little better than residuum, or tar reduced by the admixture of some thinner oil of low flash and firing point.

Mr. Wilson also recommends the use of mineral oils for hot air and gas engines, and

in the case of the latter, he enters a most emphatic protest against the use of any but pure hydro-carbon oils.—*Clark & Warren's Book on Oils.*

* * It is amusing, if not instructive, to follow the discussions which sometimes occur between men on mechanical subjects, such, for example, as steam boilers, says the *Locomotive*. The remarkable difference of opinion which is manifested on the simplest points is simply amazing. These discussions are generally carried on by men who claim to speak from the standpoint of practical experience, but it will often be found their experience has been limited to some particular business, or some special type of boiler, so that they are wholly incompetent to express an intelligent opinion on a broad subject, however honest they may be in their convictions. The steam boiler has probably been the subject of more thought, discussion, patents, and abuse in its construction and management than any other one thing under the sun, with the single exception, possibly, of a presidential candidate. Some insist on laying a boiler horizontally, others are equally certain a boiler should always stand on end, while another great and brilliant portion of the engineering fraternity, who are evidently on the fence, insist on setting boilers in an inclined position, while the degrees of inclination given by different parties embrace all the angles of the quadrant, and several more besides. Some with a view evidently of having the correct thing anyhow, combine all the different features and forms in the same boiler regardless of expense of first cost, economy of maintenance and operation, or the ridicule of intelligent mechanics. As to fuel-saving devices their name is legion. It is no uncommon thing for one and the same party to have the agency of a patent setting guaranteed to save 25 per cent. of fuel, a grate bar to save 30 per cent. more, a damper regulator to save 10 or 15 more, a heater 40 or 50 more, pumps or injectors to save the remainder, and when they are all attached the man who owns the boiler, in nine cases out of ten, burns more coal than he did before they were applied. Many victims can testify to the truth of this statement. If we thoroughly examine the question from an independent standpoint, we shall find that generally the efficiency and economy of a steam plant is in a direct ratio to its simplicity.

* * A recent issue of the transactions of the *Société de l'Industrie Minière* contains the description of two small pumping plants at the Segur pit of the Montchanin colliery and the Orleans shaft of the Brassac colliery, France. Both are interesting examples of the employment of wire rope transmission for driving underground pumps by surface machinery. At the Segur shaft the hoisting engine is used for pumping at night, but, especially during sinking, additional pumping is necessary, and this is done in the following way: An engine on the surface, 130 meters (426.5 feet) from the shaft, making 40 revolutions, drives a sheave making 360 revolutions a minute, the speed of

the 12 millimeter (0.47 inch) rope being 22.6 meters (71.4 feet). The duty is 0.3 cubic meter (10.6 cubic feet) of water per minute from a depth of 135 meters (442.9 feet). The pumps are two single-acting plunger pumps, 200 millimeters (7.87 inches) in diameter, and 500 millimeters (19.7 inches) stroke, making 10.8 strokes a minute, and requiring theoretically 10.5 horse power. The wire rope is kept taut by a sliding counter-weight arrangement making a tension of 255 kilogrammes (562.1 pounds). The average life of the rope is 1,900 working hours, during which 34,000 cubic meters (1,200,000 cubic feet) of water are raised.

* * In cases of externally fired boilers there is noticeable a snapping and bubbling sound at the bottom after pulling down the fires with a strong draught on, prior to blowing down, says the *Manufacturers Gazette*. This is due to "mud" (organic and inorganic substances) which has settled during the night, while the boiler was losing heat on the lower side, the water becoming comparatively quiet on the inside. The steam bubbles are made at the bottom, underneath the mass of mud, and, when sufficiently buoyant, comes in contact with the colder water above and are condensed, forming a snapping noise in collapsing. The important fact involved is that this never occurs in a clean boiler with comparatively pure water.

* * The *Allgemeine Mueller Zeitung* says in a recent number, that the use of hops has been found to be a most effective means for expelling worms from grain, as the worms will leave immediately after the hops are added. It has been observed that the strong odor is so disagreeable to this insect that a comparatively small quantity (even of a poor and common variety), when mixed with the grain, will immediately cause the worm to leave. It is to be observed, however, that the grain bins should be perfectly ventilated and kept clean. This remedy is not in the least injurious to grain. The grain may be ground to flour without being at first obliged to remove the small particles of hops.

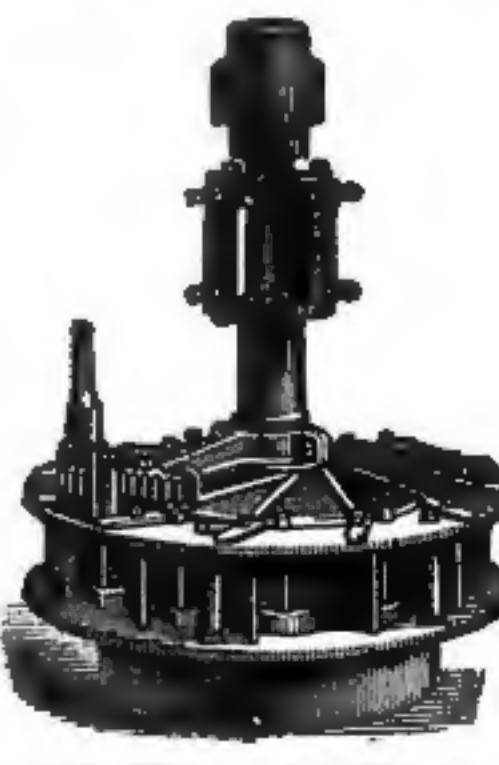
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15-inch,	18.06	30.17	.8932
17 1/2 in.,	17.96	36.35	.8930
20-inch,	18.21	49.00	.8532
25-inch,	17.90	68.62	.8584
30-inch,	11.65	52.54	.8676

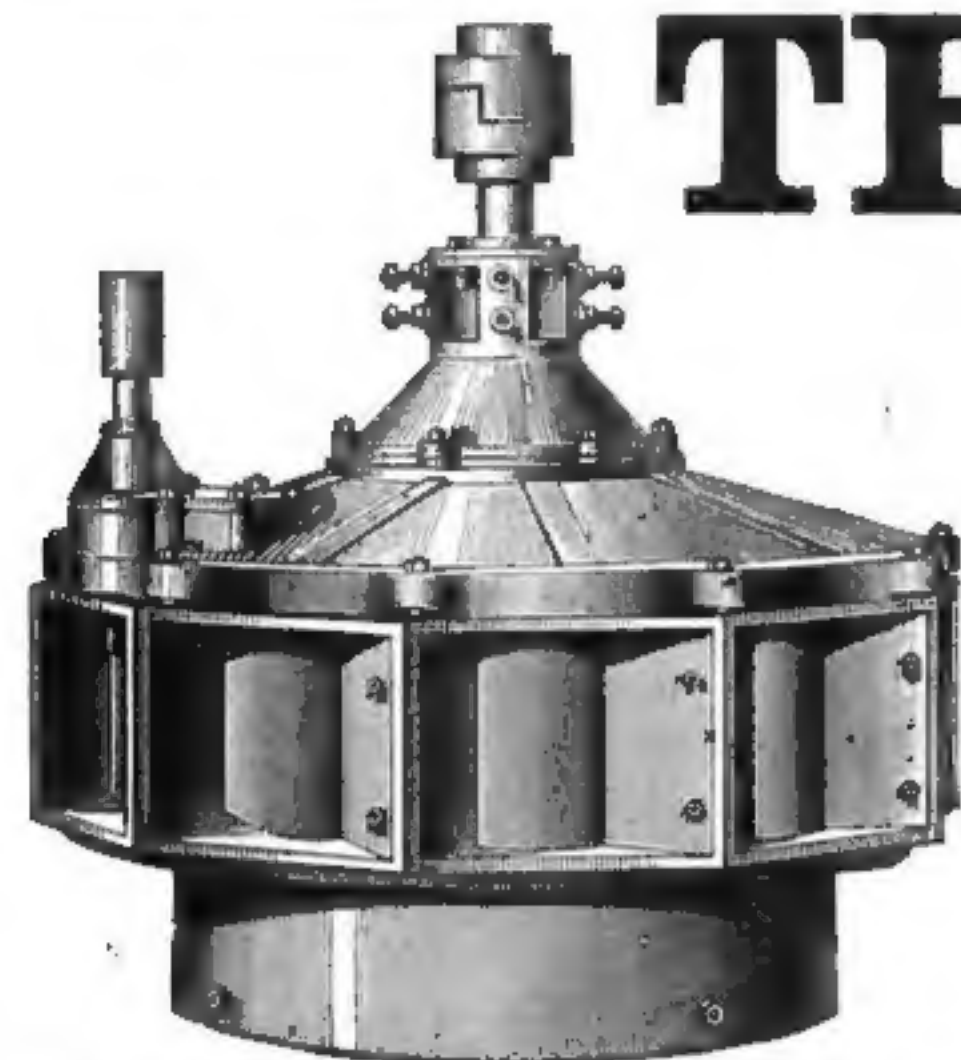
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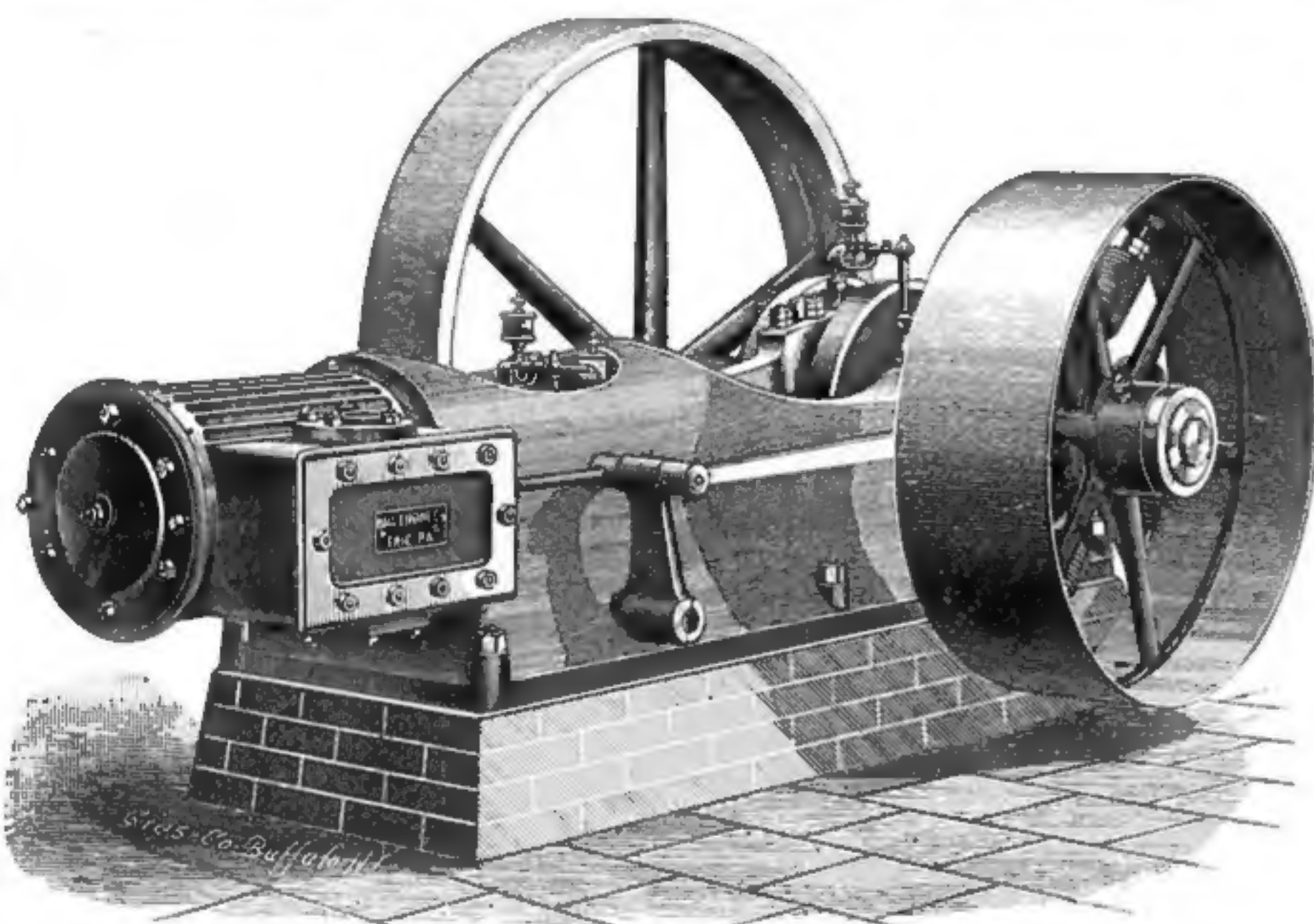
From the Records of Actual Tests at the Holyoke, Mass., Testing Flume:

PERCENTAGE OF EFFICIENCY.

	Full Gate.	3/4 Water.	1/2 Water.	1/4 Water.
24 Inch Wheel.....	.8436	.8416	.8202	.8002
24 Inch Wheel.....	.8306	.7910	.7700	.7003
24 Inch Wheel.....	.8078	.7578	.7275	.6796
30 Inch Wheel.....	.8000	.8011	.7814	.6850

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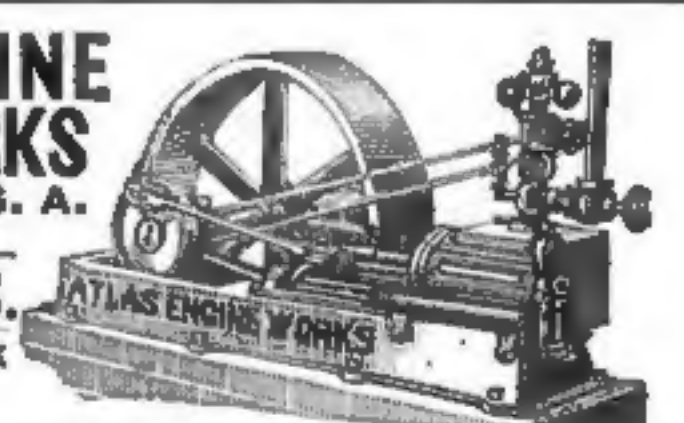
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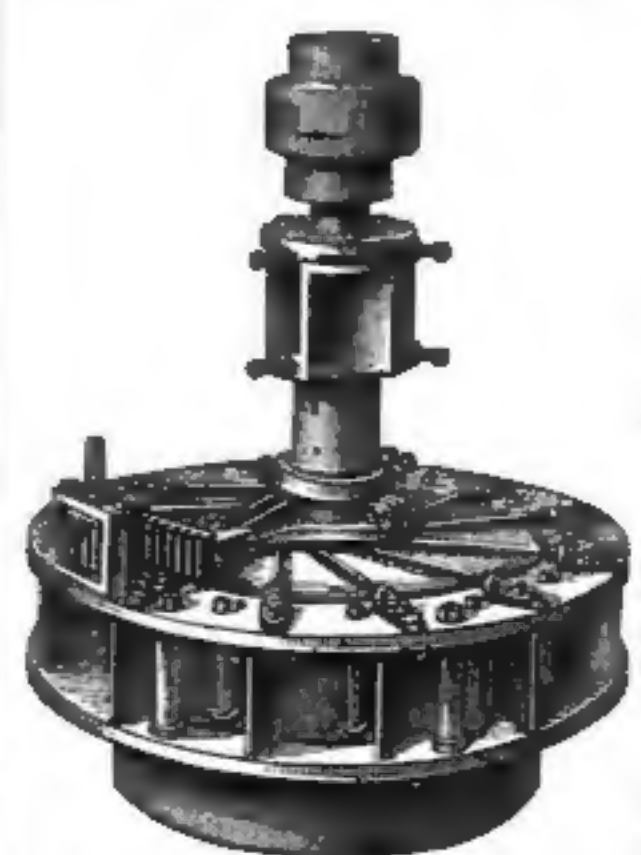
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OUR MINNEAPOLIS LETTER.

[From our own correspondent.]

A BAG FULL OF INTERESTING GOSSIP THIS WEEK—CANAL CLEANING SHUTS DOWN THE MILLS—A YEAR'S BUSINESS—THE FLOUR MARKET UNSATISFACTORY—STOCKS OF OLD WHEAT VERY LOW—NEW WHEAT IN FAIR SUPPLY BUT LITTLE BEING GROUND—CROP NEWS OF THE NORTHWEST—THE PALISADE MILL CHANGES HANDS—PUTTING IN STEAM POWER—TWO SERIOUS FAILURES—NOTES.

Milling operations in Minneapolis do not come far from being entirely suspended this week. In order to clean the east side canal, the water was let out of it Monday morning for the week; and nineteen out of the twenty-two mills in the city were closed down. The three mills enabled to run are the Pillsbury A and Phoenix, located on the east side of the river, and the Anchor on the west side, which brought its steam power into play. Together they are making about 5,800 bbls of flour per day. This is the lightest flour production that has occurred in Minneapolis for a number of years, and the platform in that respect bears a desolate appearance. Most every mill, however, is improving its water power facilities by lowering and lengthening its water rock or widening and deepening its races, and this, added to the large crew of men at work cleaning the canal, keeps up quite a commotion. More or less repairing is also being done on the inside of the mills, getting them ready for the new crop, and several of them will be unable to resume work on Monday, when the water is again let into the canal, because of the incomplete, ness of these repairs. This of course will limit the flour production again next week. The output last week was about 100,000 bbls, and the current week it has been under 30,000 bbls.

The secretary of the chamber of commerce furnishes the following report of Minneapolis receipts and shipments for the year from Sept. 1, 1883, to Aug. 31, 1884:

Receipts.	Shipments
Wheat, bus....24,514,367	Flour, bbls....4,814,424
Flour, bus....166,013	Wheat, bbls....3,132,749
Millstuff, tons 11,721	Millstuff, tons 139,541

Street deliveries of wheat added to the above, make the receipts over 25,000,000 bushels, which is nearly six million bushels more than was received last year. With the local consumption of flour, the mills turned out 4,900,000 bbls during the last crop year.

The flour market is unsatisfactory, and millers have unpleasant forebodings of the future. There is a good demand for flour, but buyers want it for less money with each sale. Export business is very light, and lower prices are being offered. Quotations here are as follows: Patents, 5.20@5.50; straight, 4.80@5.15; fine baker's, 4.25@4.50; second baker's, 3.90@4.25; best low grades, 2.20@2.40 in bags; red dog, 1.60@1.80 in bags.

The appended table shows the receipts and shipments of Minneapolis for two weeks:

FLOUR.			
Week ending	Receipts.	Shipments	
	Bbls.	Bbls.	
Aug. 26,	125	110,926	
Sept. 2,	50	129,443	
Total	175	240,369	
WHEAT.			
Week ending	Receipts.	Shipments	
	Bus.	Bus.	
Aug. 26,	323,000	41,000	
Sept. 2,	361,760	43,680	
Total	684,760	84,680	

The stock of wheat in Minneapolis elevators has gradually shrunk away until it now amounts to only about half a million bushels, while St. Paul has 30,000 bushels. Early in the week the local wheat market was weak and on the decline, which was attributed to most of the mills being shut down, but as Saturday drew near, quite a large inquiry sprang up for old wheat, and better prices prevailed. Outside millers came into the market for old wheat to mix with new, and the demand became sharp at an advance of two cents per bu. Although new wheat constitutes about one-third of our receipts, comparatively little of it has thus far been used by the mills. An increased amount will undoubtedly be ground from the time that the mills now idle resume operations. Very heavy receipts of wheat at the start are not looked for, on account of low prices, but the millers appear perfectly willing that the farmer should carry the wheat until they want it. Having been bitten with high wheat last year, our millers are more conservative this season, and will not strike into buying very largely until they are pretty sure they are on the right side of the fence. Some of them

hint at a belief that wheat is to go lower, and bewail their unfortunate condition. They say that cheap wheat means no profit for them. The Millers' Association is buying considerable new wheat, as it necessarily must, but its purchases are vastly lighter than at the same stage of the harvest last year. One peculiar feature of this market at present is the fact that No. 1 hard is selling in Minneapolis at the same price that No. 2 spring is in Chicago for September delivery, when there is really 15c difference in the value of the two grades.

Threshing is progressing in the vicinity of Fargo, and new wheat is arriving at that point already at the rate of 3,000 bushels daily. The majority of receipts grade No. 1 hard, and the price paid is 65 cents per bushel. Reports from eighteen other points on the line of the Manitoba road state that the weather continues clear and cool; that wheat is about all cut; threshing well under way, the general average given at 20 bushels per acre, and that nearly all of it grades No. 1 hard. In the neighborhood of Devil's Lake light rains have delayed operations somewhat, but not to any serious extent. Foster county, Dak., reports the wheat all cut and much of it threshed. At Le Sueur, in this state, heavy rains have practically suspended operations among farmers, but nearly all small grain had been previously stacked, and the damage will not be excessive. Sibley and Nicollet counties also report some damage to wheat in shock by recent rains, but the general tenor of dispatches from all northwestern points is "Threshing progressing; weather favorable."

Says the Dakota statistical agent: "In some localities of North Dakota harvesting is not yet completed. In Walsh county harvest only commenced about the 22d of August, and it is represented as the best crop raised in four years, although it is reported that there is considerable smut in it. This smut is confined principally to the soft varieties. All wheat in which smut is found is graded no higher than No. 3. The Russians in some localities of the southern counties of the territory, by repeatedly sowing an indifferent quality of wheat, deteriorated the product until it is almost worthless. The whole of North Dakota has a fine yield of small grain. It will average much better than last year and better than South Dakota. Threshing is just beginning in North Dakota, while it is in full blast in the south. The yield generally in the south is not quite up to the expectation, although the quality is better than last year. The report is universal that the farmers of the territory will not market their wheat at present prices unless they are obliged to, but so many of them are compelled to do so to liquidate demands against them, that their wishes will be practically nullified."

About one thousand visitors went through the Pillsbury A mill during August. The Washburn A is equally as popular with tourists, and probably could boast of as many visits had any track been kept of them. These two mills are the only ones that tolerate visitors to any extent, and of course they are kept in condition for receiving company. One can get into most any of the other mills, but it is with more difficulty that permission is secured. All that a person has to do to get into either of the great A mills is to apply at the office for a pass, and it is issued without questions. Each has a door keeper, but this is evidently more for form than anything else.

Since the Lincoln mill was burned at Anoka the Washburn Mill Co. has been negotiating for the purchase of the Palisade mill in this city, owned by L. Day & Co., and it seems that the papers only need to be passed to consummate the trade. The Palisade is of about 1300 bbls capacity, and has been under lease to the Washburn Mill Co. the past year, although, on account of various difficulties, it has not been run much of the time. Two years ago the Palisade was a 600 bbl mill, but in the winter of 1882 it was torn out, reconstructed and enlarged to its present capacity. The change was not a success, and after making several attempts to run the mill, Day & Co. finally turned it over to the Washburn Mill Co. The mill was at the lower end of the canal, and got very little water to run with during last winter. Since then it has been operated spasmodically and has undoubtedly proved a costly investment to its owners. The Washburn Mill Co. is reported to have got the mill for \$100,000—much less than its cost; but considerable changes will no doubt have to be made before it is in shape for good work. D. Clark, head miller of the Lincoln mill before destroyed, will be placed in charge of the Palisade, succeeding T. A. Baker. In this displacement, Mr. Baker thinks that he has not been treated quite equably by the management, and his cause is espoused by a number of fair-minded men conversant with the facts. It would be natural now to believe that the possibility of the Washburn Mill Co. rebuilding the Lincoln mill at Anoka was removed, but this is yet to be officially passed upon.

Some of our millers have made up their minds that it is better to make something of an investment and provide themselves against the possible

contingency of ever being forced to shut down their mills from the lack of water power, remote as the chances for that may be. The first to follow the initiative taken by Pillsbury & Co. a year ago in supplementing their water power with steam, are the proprietors of the Pettit mill, operated by J. A. Christian & Co. They have ordered a 400 horse power Reynolds-Corliss condensing engine, and will place it on the upper side of their mill. The contract specifies that the plant shall be ready for use inside of sixty days. The Washburn mills were the next to announce a determination to put in steam power. As soon as the merits of different makes of engines can be investigated by Wm. de la Barre, one of 1,000 horse power and another of 750 horse power will be ordered for the A & C mills respectively. Buildings to contain the same, together with a battery of 13 boilers, will be commenced in a few days. They will be located in the space on the upper side of the A mill. The Washburn estate has set aside \$75,000 for the improvements. There are other firms that have considered the question of putting in engines, but so far no more have signified their intention of doing it. Should rains continue as numerous as for some time back, there is likely to be no need for steam power. Rains have been quite frequent in the past six weeks, and have not been without an effect on the river, keeping it at a very respectable stage. There are now hopes entertained in consequence that the water power this winter will be very good. In considering the benefits of steam power, those arising in case of low water should not alone be thought of. Often a mill breaks its water wheel, or has an accident to its other water apparatus which necessitates a shut down, sometimes for a number of days, and not infrequently at a time when it can be least afforded. The engine is always ready at such a critical point, and may be the means of making a large share of its cost on a single occasion. This is the way those putting in steam reason—they have an infallible motive power at all times. A practical illustration of what we mean came under notice this week. The water being let out of the west side canal, all the mills except the Anchor had to shut down, notwithstanding that some of them wanted to run very bad. The Anchor had steam power, and was very soon in operation, while its nineteen companions stood idle.

We have to chronicle an important elevator and mill failure in this state, involving no less a personage than L. F. Hubbard, governor of Minnesota, and also W. P. Brown, ex-president of the Minnesota State Millers' Association. The corporations which this misfortune has overtaken are the Minnesota Elevator Co., of Red Wing, and the Mazeppa Mill Company, of Mazeppa. The companies had close relations with one another, and one pulled the other down. The elevator company made an assignment on Tuesday to E. S. Wilder, and the suspension of the mill company soon followed. The elevator company is officered by J. G. Lawrence as president, and C. H. Duryea as secretary and treasurer, the latter being manager.

The board of directors consists of the two gentlemen above named, and W. P. Brown. Its liabilities are estimated at \$200,000, and its assets at \$275,000 to \$290,000. The capital stock was \$200,000, with \$104,000 paid and held as follows:

J. G. Lawrence, Wabasha,	\$43,700
W. P. Brown, Red Wing,	4,650
W. S. Watts, Scranton, Pa.,	4,350
John Hurd, Bridgeport, Conn.,	5,800
L. F. Hubbard, Red Wing,	6,300
Estate of H. P. Rick, Wabasha,	2,600
C. H. Duryea, Red Wing,	10,100
Mazeppa Mill Co., Red Wing,	13,550
P. A. Richards, Wabasha,	5,000
Wabasha Mill Co., Wabasha,	2,150
N. C. Newell, Springfield, Mass.,	5,800
Total	\$104,000

The corporation was organized Sept. 3, 1883, and was a consolidation of the elevator interest of the Mazeppa Mill Co., and the Wabasha Elevator Co., of Wabasha. It owned about forty elevators, mainly on the River division of the Milwaukee road. About ten of these were lately purchased, including those on the new Eau Claire line, in Wisconsin.

These elevators were recently leased to H. J. O'Neil, of Winona, who will continue their operation. The assignee entertains a hope that the creditors may be brought together and some sort of a compromise agreed upon which shall save the several stockholders from the utter ruin that threatens them in the failure. He is authority for the statement that the company has endeavored to do too large a business on borrowed capital, and has encountered besides a steadily falling market. All the money paid in was absorbed in the purchase of the elevators, and they borrowed to complete the purchase of these, and commenced to transact business on still other borrowed capital.

The failure of the mill company is believed to be more disastrous than that of the elevator company, but the two concerns are so interwoven that it is impossible to arrive at the assets and

liabilities of each. The assignment of the elevator company is understood to have been precipitated by the inability of the mill company to meet its obligations to the elevator company, to which it was indebted in the sum of \$53,000 for wheat. The mill company was organized about four years ago, and the capital stock was fixed at \$100,000. The mill property, including an elevator erected last year at a cost of \$18,000, has cost \$160,000. It has been operated quite steadily throughout the year, but suffered in common with many other mills in selling low-priced flour ground from high-priced wheat. To the complication is added the fact that Gov. Hubbard and Messrs. Brown and Duryea are all heavy endorsers upon the paper of the elevator company. The assignment of the mill company was brought about by an attachment of \$10,000 made by the First National Bank, of Red Wing. It is feared by many that Gov. Hubbard and Mr. Brown are deeply involved, and will lose their all.

The St. Anthony is the second mill that has been sold in Minneapolis in the past ten days. Morse & Samnys, who are operating the Union mill under lease, have bought the St. Anthony, and will start it up as soon as the water is let into the canal. Jas. McCartin, head miller of the Union has been placed in charge and will run both mills. There is some talk that the Union will be given up as soon as the firm's lease of it expires. The St. Anthony, formerly known as the Arctic mill, has had rather an eventful history. Several parties have been swamped while operating it, though that cannot be taken as anything against it now. Hobart & Shuler, and we do not know who else before them, failed while operating it. Wheeler, Hineline & Co. were the next occupants, and the venture was disastrous to two of the firm, though it might have been financially beneficial to the third; but for this the mill was hardly responsible, though unfortunate enough to be mixed up in the trouble. The mill has a capacity of 450 barrels on the roller system, being changed over by Wheeler, Hineline & Co., and ranks well with our other mills. Hinkle, Greenleaf & Co. have operated it the past year, and evidently made some money out of it, though perhaps not a great sum.

L. W. Pruss, of this city, has commenced a suit in the United States Court against the Milwaukee Dust Collector Mfg. Co., for \$100,000 damages, for "slander of title." Mr. Pruss has got up a dust collector, and he alleges that the Milwaukee Company has killed his business by claiming it to be an infringement of the patents under which the Prinz machines are manufactured, and therefore he wants the modest sum of \$100,000. The case comes up at the December term of the court.

The Minneapolis Head Millers' Association held its annual meeting last Tuesday evening, and elected officers for the ensuing year as follows: President, Jas. McDaniels, Washburn A; vice-president, Jas. Tamm, Phoenix; treasurer, Wm. Helfrich, Anchor; secretary, Fred J. Clark, Northwestern Miller.

J. A. Christian, president of the National Millers' Association, has been very sick the past week, he having overdone on a recent hunting expedition. When last heard of he was better, and his condition not considered serious.

An account of their flume bursting out, and the prospect of low water this winter, Lee & Herrick, of Crookston, Minn., are to put steam power into their mill.

A scheme is said to be on foot at St. Paul to build an elevator for handling coarse grain.

J. Silas Leas is around among "the boys" once more.

Minneapolis, Sept. 6, 1884.

CALEB.

Notes from the Mills.

The Miller Co., Canton, Ohio, will ship Phil. Raney, Athens, Ill., one double set of rolls.

At Rio., Ill., Sept. 2, the Blume grist mill burned down. The loss was about \$5,000. There was no insurance.

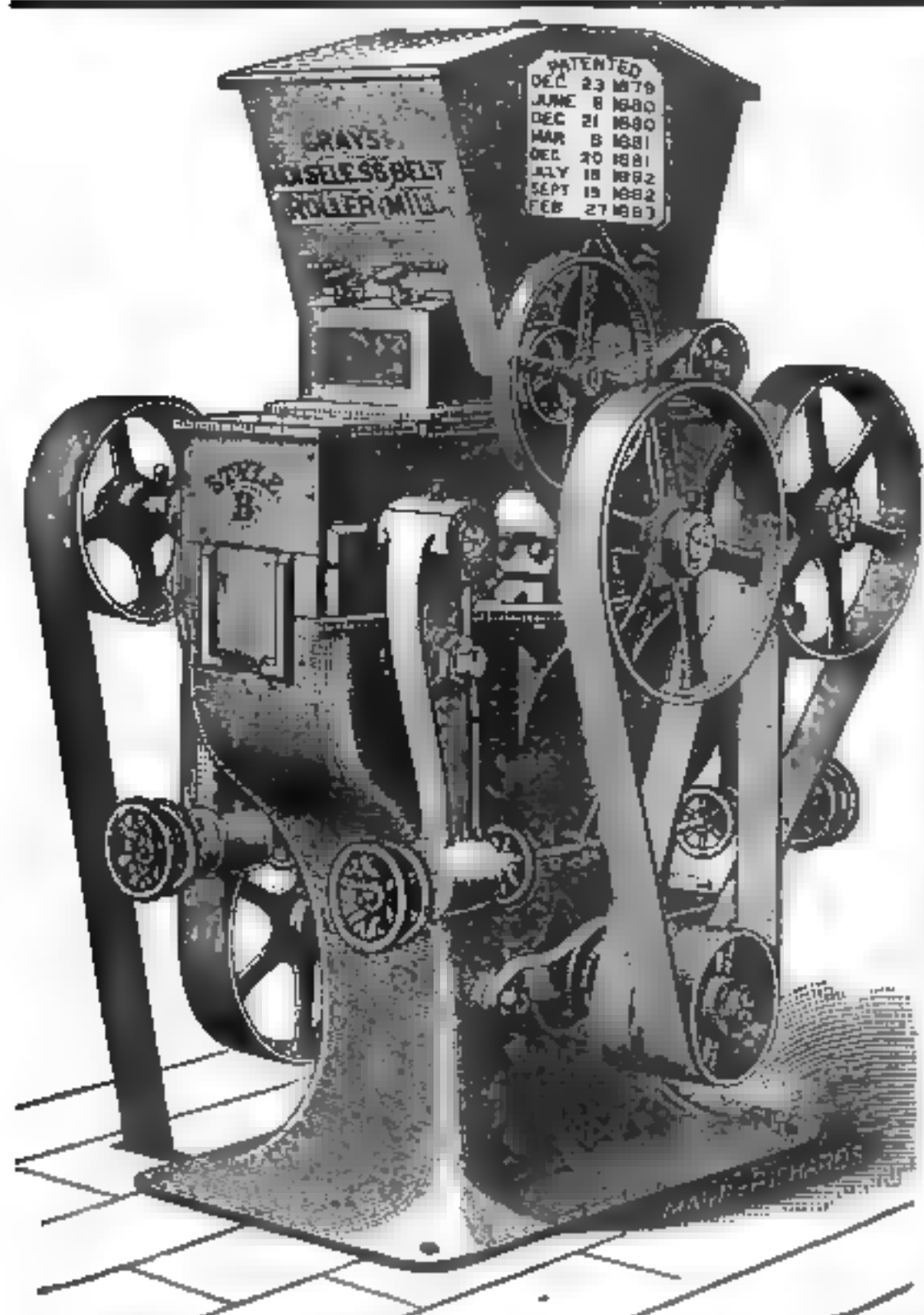
James Christensen, a boy ten years old, while playing in Applegate's elevator, at Atlantic, Iowa, stepped in a corn bin and was taken out dead.

S. L. Ellis & Co., Hopkinsville, Ky., have placed an order with the Case Mfg. Co., Columbus, Ohio, for two pair rolls with patent automatic feed.

An assignment has been made by the Medford, Wis., Mill company, for the benefit of its creditors, to A. J. Perkins. The assets are estimated at \$5,000; liabilities, \$8,000.

The Miller Co., Canton, Ohio, have received a telegram notice that they have been awarded the contract for changing the mill of Davis & Drew McKeesport, Pa., to the Rider system.

By the breaking of an elevator rope in Allis & Co.'s shops, Milwaukee, Charles Knudson was fatally, and George Lund and James Gallagher were seriously injured, Knudson dying soon after.



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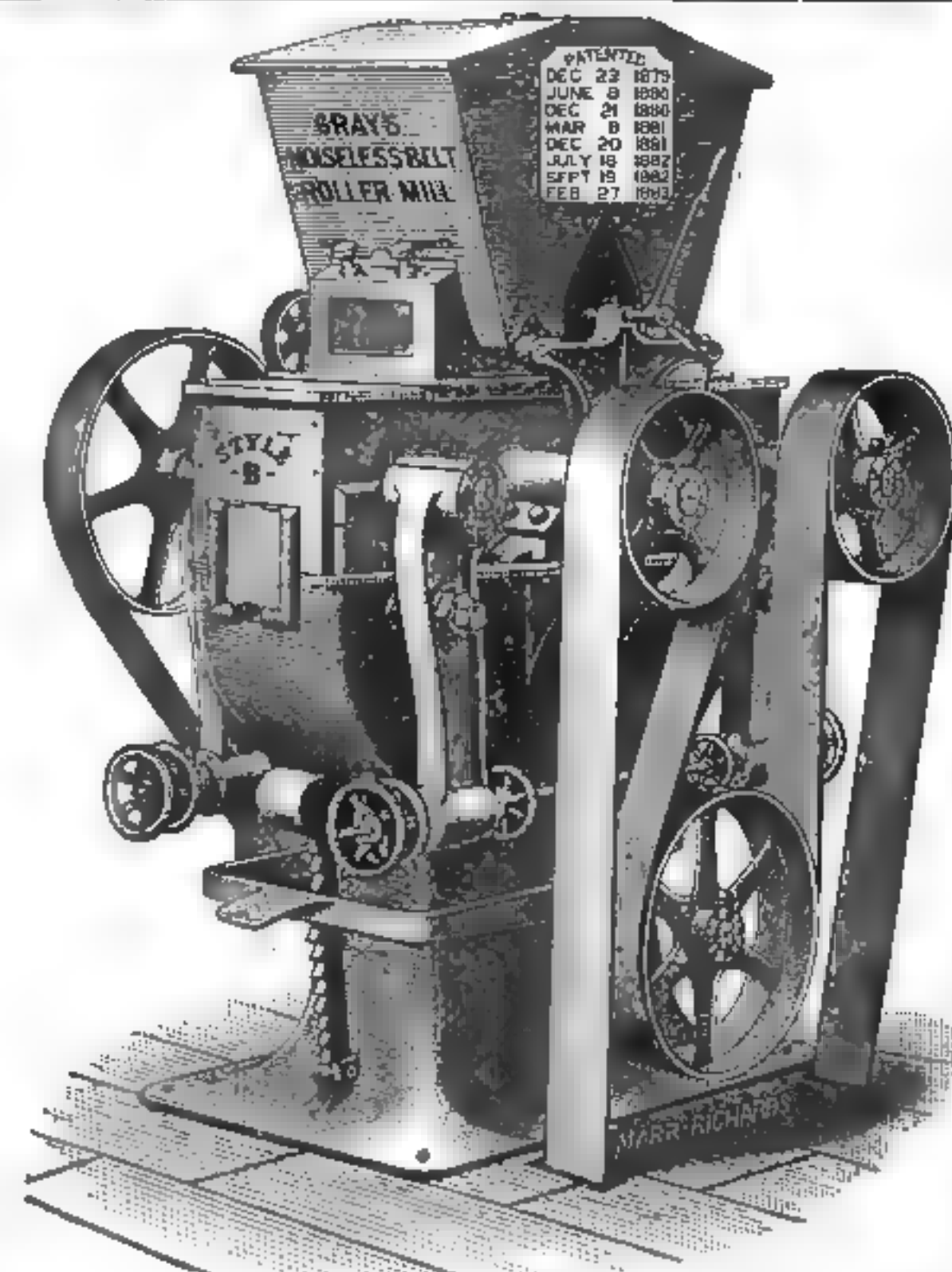
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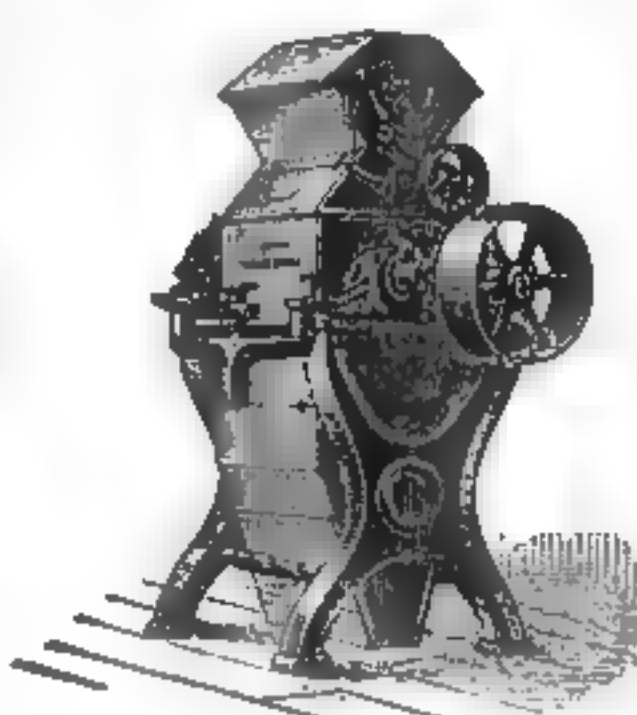
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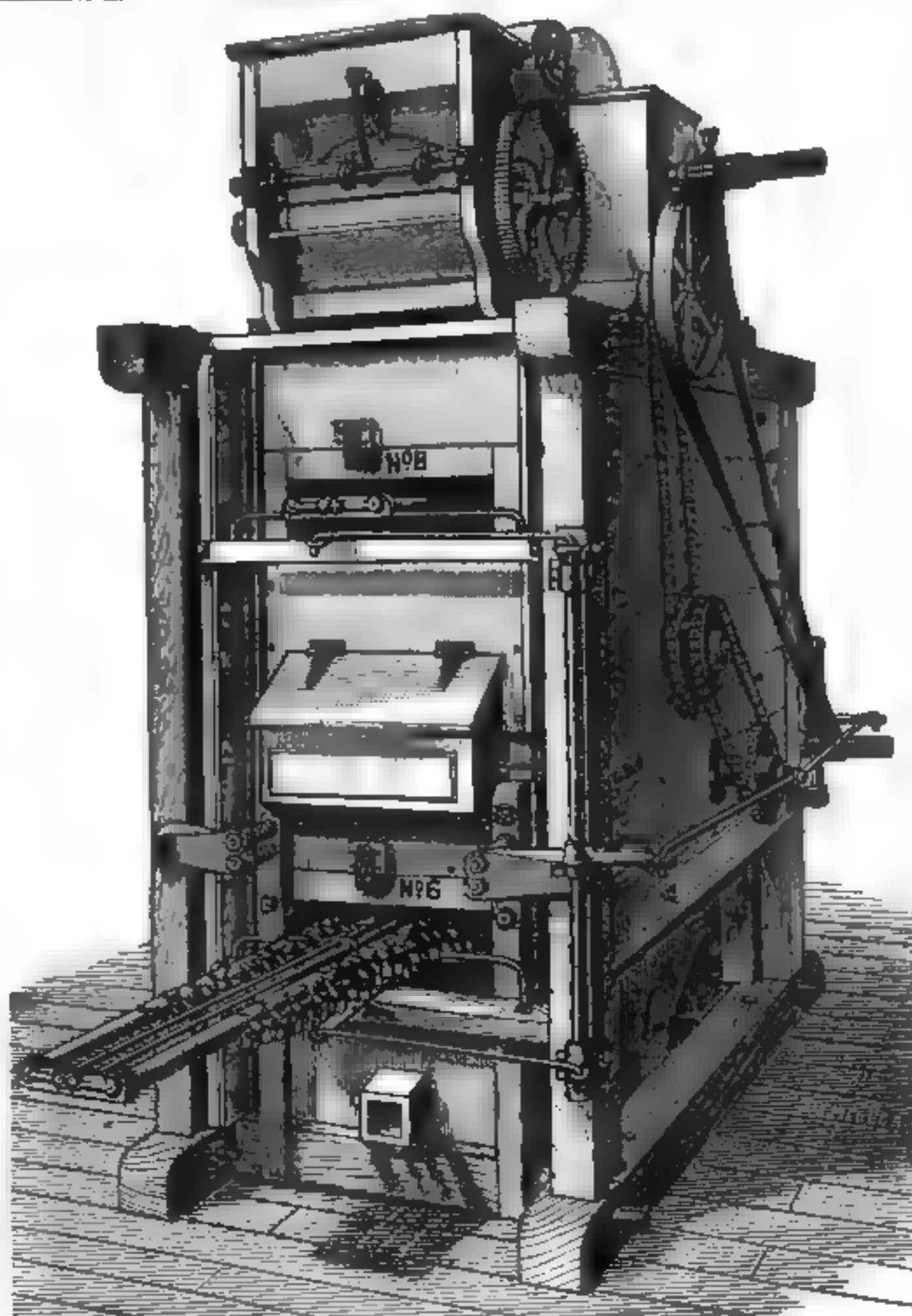
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J. T. Walter, Sole Manufacturer, Easton, Pa.



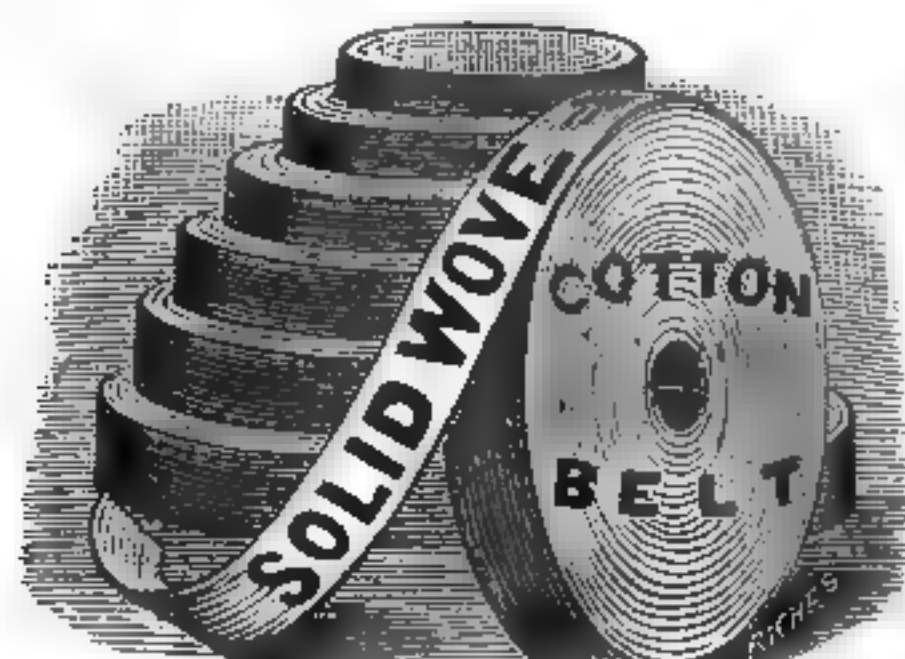
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For facing down high places on the buhr, this tool has no equal, and can be done much better and in one-sixth the time than with the mill pick. It is much larger, cuts better, can be used on either face or furrow, can be used until the corundum is entirely worn out on one side and then turned on the other side. Has over four times the amount of corundum and when the corundum is worn out can be replaced in the handle at a small cost. Sent by express, \$3.50. Satisfaction guaranteed, or money refunded. Address

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THE BRITISH HARVEST.

MR. HENRY F. MOORE'S seventh annual report on the harvest of the United Kingdom has the following: "The prospects for the English farmer is to-day brighter than during any one of the past seven years for which I have sent you reports. During the past fortnight the rains have given place to intense heat, and this has ripened off the corn so quickly that in many parts of the country we are unexpectedly in the midst of the harvest. As usual, I have sent out my inquiries over the whole of the United Kingdom. I have asked, as for years past, for the opinions of farmers actually engaged in growing the crops on the crops of the year, these to be given by numbers—100 being taken as representing an average crop. An 'average crop' also is not taken as representing an unknown quantity. In 1882 I asked each of my correspondents the question—For the whole time that you have been engaged in actual farming, what have you found your average crops to be? The result was that I received, in a very large number of cases, actual yields for over 30 years on given areas, and from these and numerous other reports I found 29 bushels of wheat, 35 bushels of barley, 40 bushels of oats, five tons of potatoes, 27 bushels of beans, 26 bushels of peas and 1½ tons of hay might well be assumed as the average crops per acre, and so I have adopted these in the returns sent out. Thus, the figures 100 would in each case mean that quantity. In all, 294 replies have been received, against 280 last year and 418 in 1882. They give the following as the figure picture of the promise of the crop this year, as compared with those of the previous three years:

Years...	Wheat...	Barley...	Oats...	Potatoes...	Beans...	Peas...	Roots...	Grass hay...	Clover hay...
1881.	90.0	110.0	80.0	98.0	90.0	85.0	...
1882.	92.2	95.4	108.1	96.4	108.1	101.6	107.1	112.6	118.4
1883.	91.6	94.0	106.6	120.6	98.7	107.8	102.4	96.4	108.4
1884.	112.2	98.1	94.3	108.4	98.2	91.4	78.8	79.1	82.4

"The report speaks in detail of the various crops, and states that several bad reports come on wheat from large wheat-growing districts, while in the barley districts the reports on that crop are good. The yield of wheat is estimated at about 11 million quarters, leaving us dependent on foreign supply for only 13 million quarters—a smaller quantity than for years past. So far as markets are concerned, the coming year bids fair to see them glutted with wheat, while even lower prices may be expected."

THE MILL FURNISHING INDUSTRY IN AUSTRIA.

Whoever is acquainted with the Austria-Hungarian, and especially the Vienna indus-

try, knows that only first-class products are permitted to leave the mill furnishing establishments, says the *Allg. Masch. Industrie Zeitung*. It is a matter of surprise to hear at present statements made that mill furnishing can no longer be classed as a lucrative business. Considering that Austria-Hungarian milling machinery is used all over Europe and exported to trans-oceanic countries, it was deemed a matter of interest to discover the causes of such a depression. Various opportunities offered to obtain a knowledge about the manner in which several younger firms have tried to carry on an international business, have convinced us that their manipulations tend very forcibly to injure not only themselves and their competitors, but also the whole mill furnishing industry of the country.

The aim of our manufacturers is to produce good machines. If we now find one firm whose special aim appears to be the production and introduction of cheap machinery, we naturally infer that it can be done only at the expense of quality of material or workmanship. The condition of the Austrian money market does not allow a very extended credit; if a factory sells goods on long payments, the small profits are lost in the interests on the capital. But in order to obtain a profit somewhere, such establishments resort to the practice of deceiving the millers by selling imitation machinery for the real article. Such firms try to profit wherever they can, and wherever an opportunity offers itself, which is generally with the ignorant miller. But such deceptions will come to an inglorious end. If we hear, for instance, that in a small city in Southern Russia a miller enters a serious complaint about the unreliability of Austrian mill furnishers, it should be our duty to investigate the case and find out who is to blame; if we then hear that the miller in question has bought cheap machines on long term payments, we must admit that somebody has been deceived. The Russian miller, naturally considers himself the injured party, and as a matter of self-protection he has recourse to the old-fashioned, but efficient method of refusing payment. Now if the manufacturer values his money and his reputation at all, there is nothing left for him but to meet the miller half way and accept whatever money is offered in settlement. Such instances are by no means rare and our attention has been called to them before.

Sales are made in France and England on a three months credit; in Austria no business is transacted on longer terms than from four to six months; what then shall we say when we are told that a certain firm sells its machinery not only twenty per cent. cheaper than anybody else, but extends the time of payment to fifteen months? Competition under such conditions is impossible for honest firms, and the only consolation we have is that a business run on such principles, must be short-lived.

The mill furnishing industry in Austria-Hungary, which has attained such large dimensions in so short a time, will again gain strength after such swindling firms have either disappeared or changed their nefarious tactics, an occurrence fervently wished for in the interest of all honest dealers. Every one of our readers will agree with us when we say that it is cheaper for millers to pay high prices for machinery of good quality, than purchase low priced machinery of poor quality.

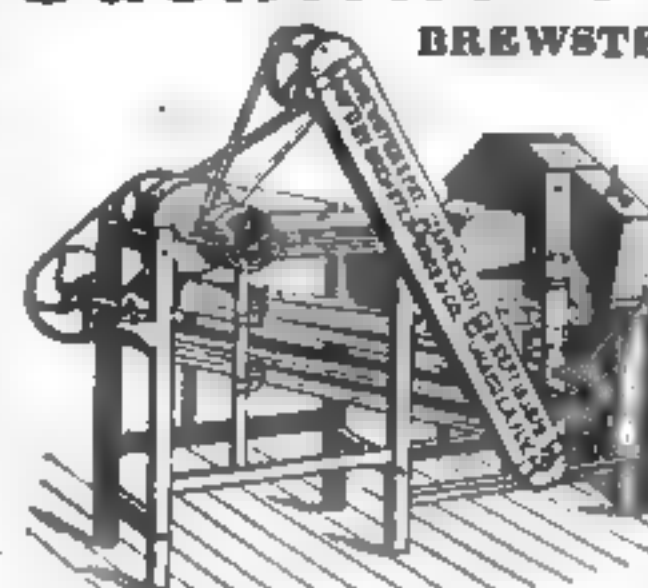
AGRICULTURAL CONDITIONS IN FRANCE.

The division of the land into innumerable small parcels is progressing rapidly in France under the new laws. The number of land owners who are unable to keep any stock whatever is increasing; on the other hand wages have been relatively high during the past years and there is no indication of any reduction. As a consequence France can no longer produce grain and meat in quantities sufficient to meet the home demand and has to depend upon foreign imports at prices made at the leading markets. All this combines to make agriculture less profitable, and where the land is mortgaged to any extent, agricultural pursuits have been almost entirely abandoned. While the

quarter of wheat must bring the price of 25 francs in order to make its production remunerative in France, it ranges from 18 to 23 francs, while the rents for farm land are reduced from 25 to 50 per cent. of those received for the same lands between 1865 to 1875. The only remedy seems to be a union among the agriculturists for the purchase of improved machinery, agitation for the reduction of transportation charges and improvements in the system of common school education in order to enable the next generation to appreciate modern agricultural cultivation in all its various branches. In order to meet the immediate demands the French government contemplates an increased tariff on cattle and a modification of the transportation expenses.

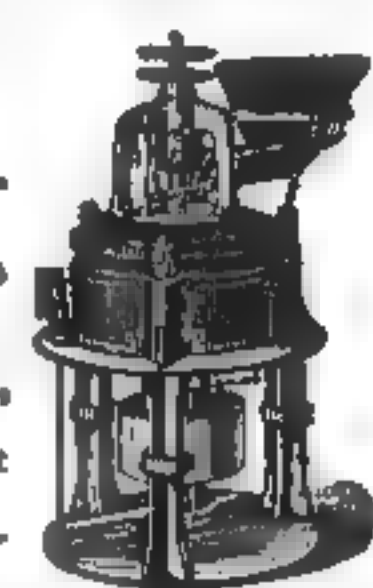
Among the most necessary internal improvements the necessity for improved agricultural implements receives a fair share of attention. We are told that nearly all the strictly agricultural districts still use very primitive means of cultivating the soil, and the introduction of modern implements is slow. A fair share of the grain raised is yet cut with the sickle of their forefathers, and exhibitions of reaping machines are instituted by local government officials, to convince the farmers of the superiority of modern over ancient methods of cultivation.

Buckwheat Refiners & Portable Mills



BREWSTER'S CELEBRATED
Buckwheat Refiner
Is the only machine
whereby the greatest
yields of
PURE, WHITE
SHARP FLOUR
can be obtained.
The only reliable, practical
and durable machine
IN THE WORLD.

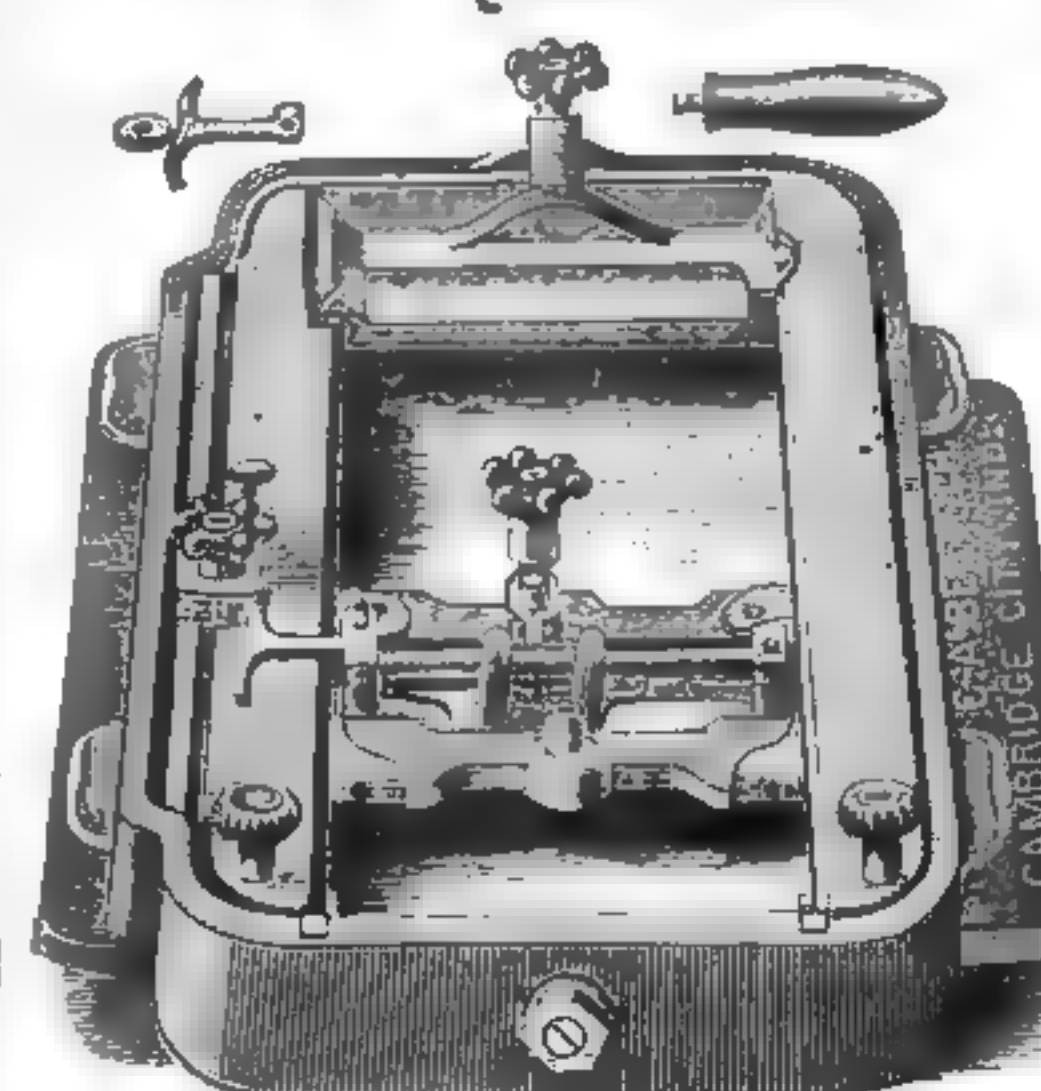
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AND AUTOMATIC
MIDDINGS MILL
Is Strictly Self-Protecting
The Best Adjustment in
the World.
And the only
Perfect Granulator
Grinds Cool, Self-Oiling, Great
Saving of Power.
Simplicity and Durability
Combined.



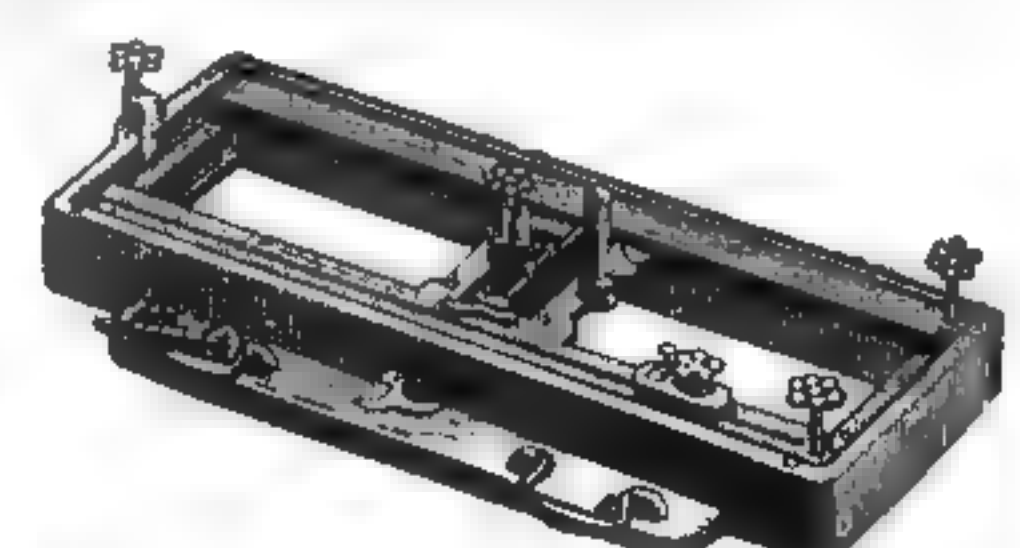
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BREWSTER BROS. & CO. Unadilla, N. Y.

TEETOR'S QUICK ADJUSTABLE DIAMOND DRESSER.



The A Machine. 29 inches long, 18 inches wide. Weight, 140 pounds. Same width carriage as the B machine.



The B Machine. 33 inches long, 19 inches wide. Weight, 165 pounds.

Automatic rod feed. A Revolution. Will cut over 1,000 cuts per inch, right or left, with one or two diamonds for facing. The only Practical feed, especially for deep facing, once going over. No tools required; will Warrant Better Satisfaction, and More Work of all kinds can be done with less trouble than with others. The best of references given. Mechanics are much surprised as to their merit, and say it is "A Revolution." There has never yet been a call for repairs for any one machine. Have been in operation for over four years. Also a Perfect Diamond Holder. See a Machine shown by Thos. Bradford & Co., Exposition, Cincinnati, Ohio. Full descriptive circulars forwarded. Mention this paper.

C. A. BERTSCH, MANUF., CAMBRIDGE CITY, IND.

HE LAUCHS BEST WHO LAUCHS LAST.

WE CONSIDER THE FOLLOWING TESTIMONIALS CONCLUSIVE EVIDENCE THAT OUR TURN TO LAUGH LONG AND HEARTILY HAS COME.

THE MILLER CO., CANTON, O.

In answer to your inquiry of 10th inst. requesting our opinion as to the merits of the RIDER SYSTEM AND BREAKS, permit us to most heartily and gladly compliment your system (Rider), and the Rider Breaks. We are more than pleased with your System, and as to the Rider Breaks we will say they are the acme of success. WE WOULD NOT BE WITHOUT THEM. We can see great success for your System and Breaks in the future.

They have only a 10x20 Engine, and are making 160 Barrels per Twenty-Four Hours, and are 1,800 Barrels behind orders.

CANTON, OHIO, Aug. 15, 1884.

THE MILLER CO., CANTON, OHIO.

Gentlemen: Please find enclosed Check for \$144.22 in full of account on contract. We have been running your machinery for the past five months, and it is giving entire satisfaction. The Rolls run nicely and the adjustments are good. THE BREAK MACHINES GIVE US NO TROUBLE AT ALL. WE THINK THEY ARE THE BEST BREAK MADE. We also think your Milling Engineer, Mr. Rider, is an expert in his profession. We wish you much success. Yours truly,

FLUSHING, OHIO, Sept. 3, 1884.

STRATTON, STANTON & CO.

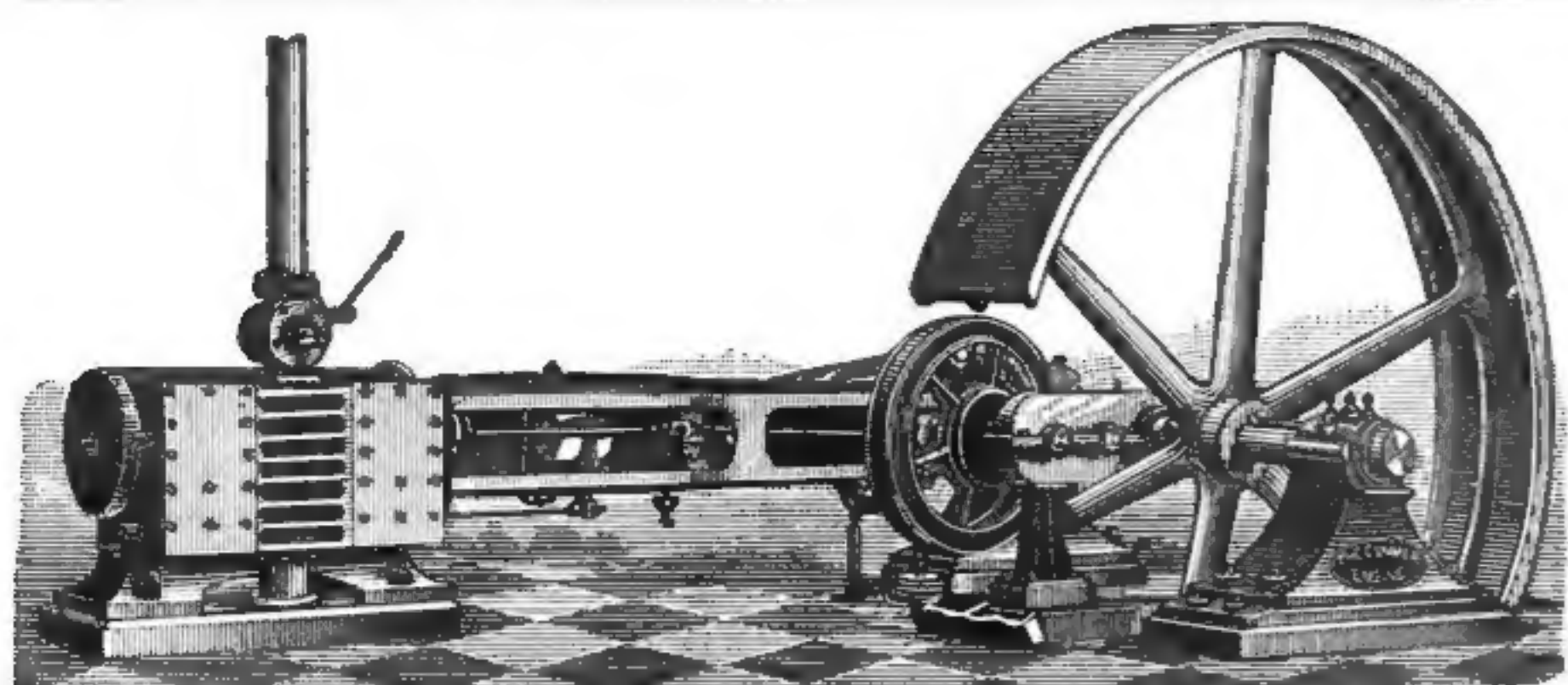
This Mill has a Capacity of 75 Barrels.

WATCH FOR NEW TESTIMONIALS AS WE HAVE A SURPLUS.

Order a SAMPLE BAKING from THESE MILLS and CONVINCE YOURSELF of WHAT WE SAY.

THE MILLER COMPANY, CANTON, O.

MANUFACTURERS OF THE RIDER BREAK AND MILLER ROLLER MILLS.



THE CUMMER AUTOMATIC ENGINE

IS UNEQUALED IN
Ease of Operation, Effective Duty,
Close Regulation,
In Quick Starting up to Speed,
Uniformity of Speed & Economy of Fuel.

Awarded the Gold Medal at the Cincinnati Exposition, and a special prize for extraordinary merit; also the highest medal at Louisville for the best automatic engine.

IT IS THE BEST ENGINE MADE.

These are points of importance with every miller and manufacturer who expects prompt, even duty of an engine. Printed matter, cuts, and information promptly furnished on application. Send for our 150 page Illustrated Catalogue.

THE CUMMER ENGINE CO., CLEVELAND, O.

THE BEST AND CHEAPEST COB CRUSHER IN THE WORLD.

Steel Being Used in its Construction.

PRICE, 30.00.

CAPACITY 75 BUSH. PER HOUR.

Thousands of these Crushers are now in use, and giving entire satisfaction.

Please Send for Circulars.

R. C. McCULLEY, LANCASTER, PENN.



BUCKWHEAT MILLERS

WILL FIND IT TO THEIR DECIDED ADVANTAGE TO INVESTIGATE THE CONCEDED MERITS OF

CRANSON'S SILVER CREEK ROLLER BUCKWHEAT SHUCKER

ITS SUCCESS IS BEYOND QUESTION. ITS VALUE HAS BEEN DEMONSTRATED IN MORE THAN 800 CASES. IT IS THE ONLY PERFECT BUCKWHEAT SHUCKER IN THE WORLD.

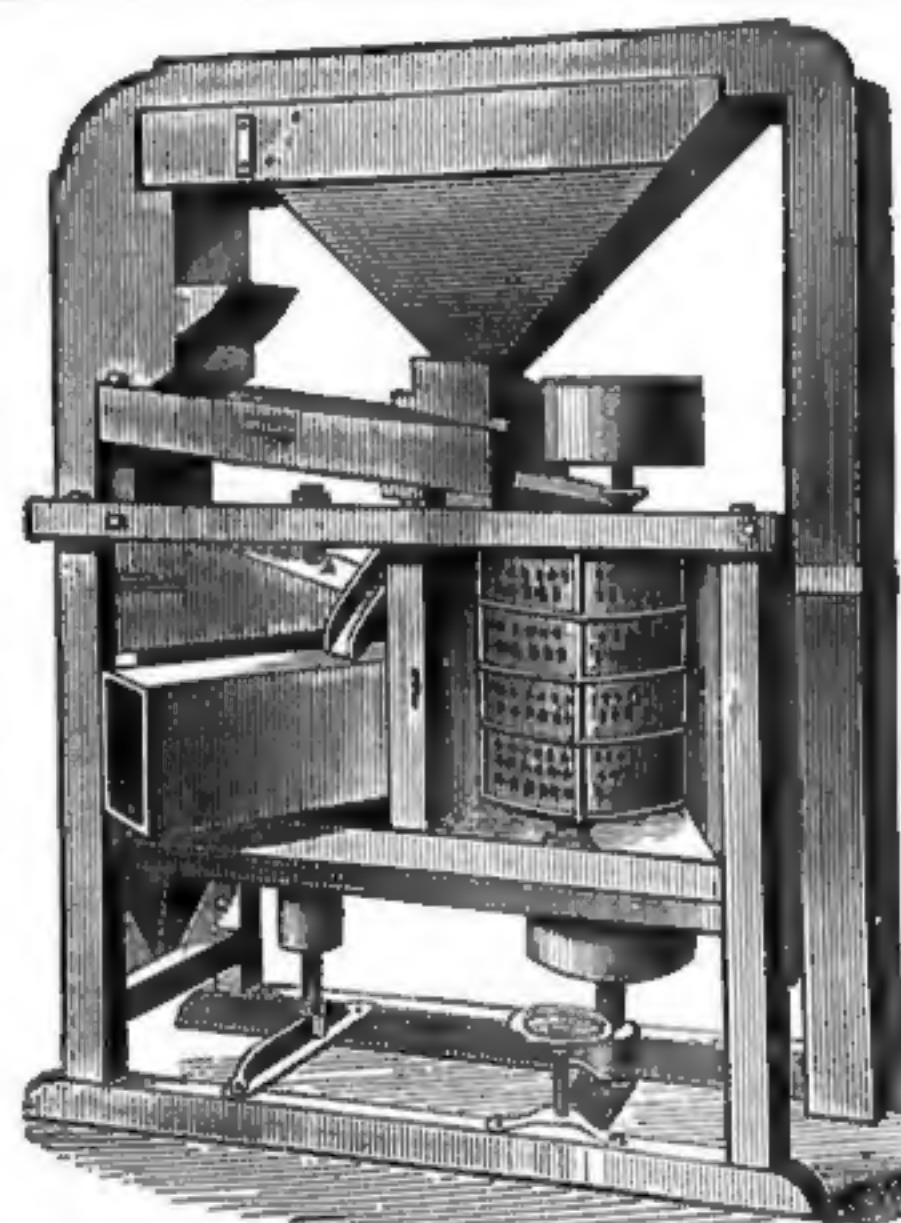
G. S. CRANSON & SON, PROPRIETORS SILVER CREEK, N. Y.

TRIMMER'S Improved Adjustable GRAIN RUBBING, POLISHING —AND— SEPARATING MACHINE COMBINED.

It will clean, rub and separate wheat, and take out the rat balls, black steel seeds, joints of straws, cockle and other impurities. It will also rub off more fuzzy ends and dust from the creases of the berries, by rubbing the wheat together as it passes up between the rubbers, so each berry must get rubbed, scoured, and polished alike. It will do all of this work better and last longer than any other machine of the kind. All this we guarantee. It will also clean barley and rye.

SEND FOR DESCRIPTION & PRICE LIST.
Kreider, Campbell & Co.

MILLWRIGHTS & MACHINISTS,
1030 Germantown Avenue, Philadelphia, Penn.



PORTABLE FORGES

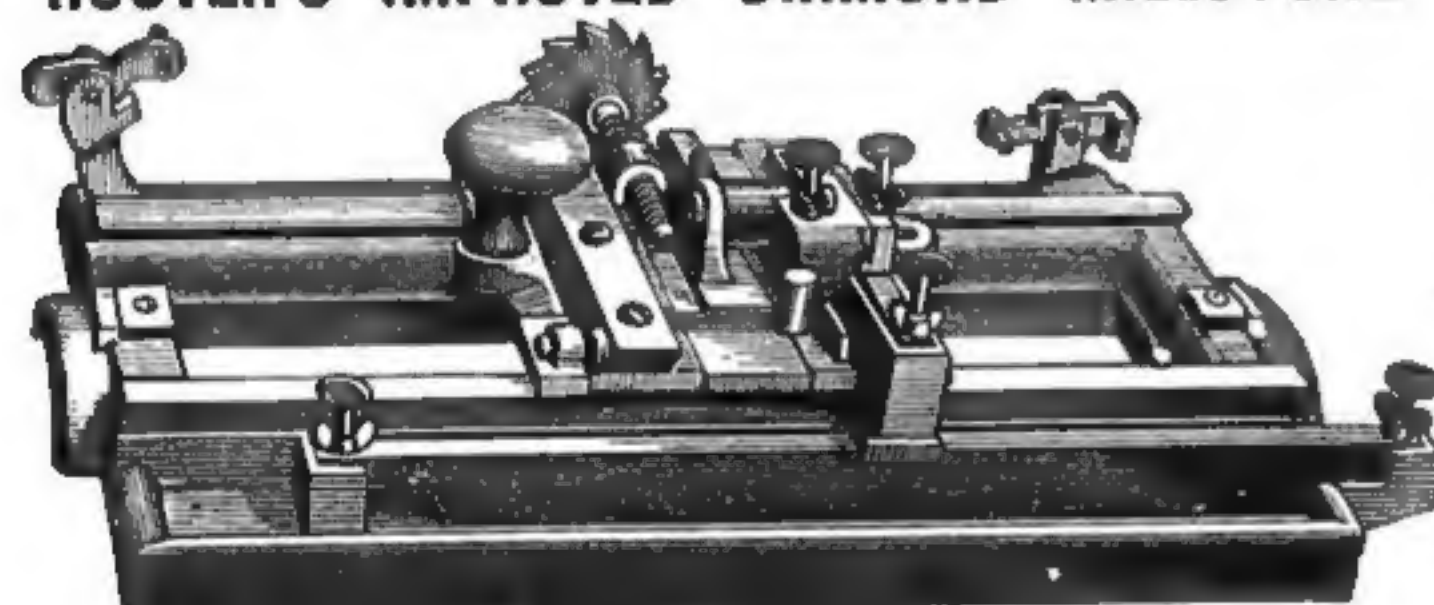
Empire Portable Forge Co.
Cohoes, N. Y.
Send for Catalogue.

HOOVER'S IMPROVED DIAMOND MILLSTONE DRESSING MACHINE.

ADAPTED TO ALL KINDS OF DRESSING.

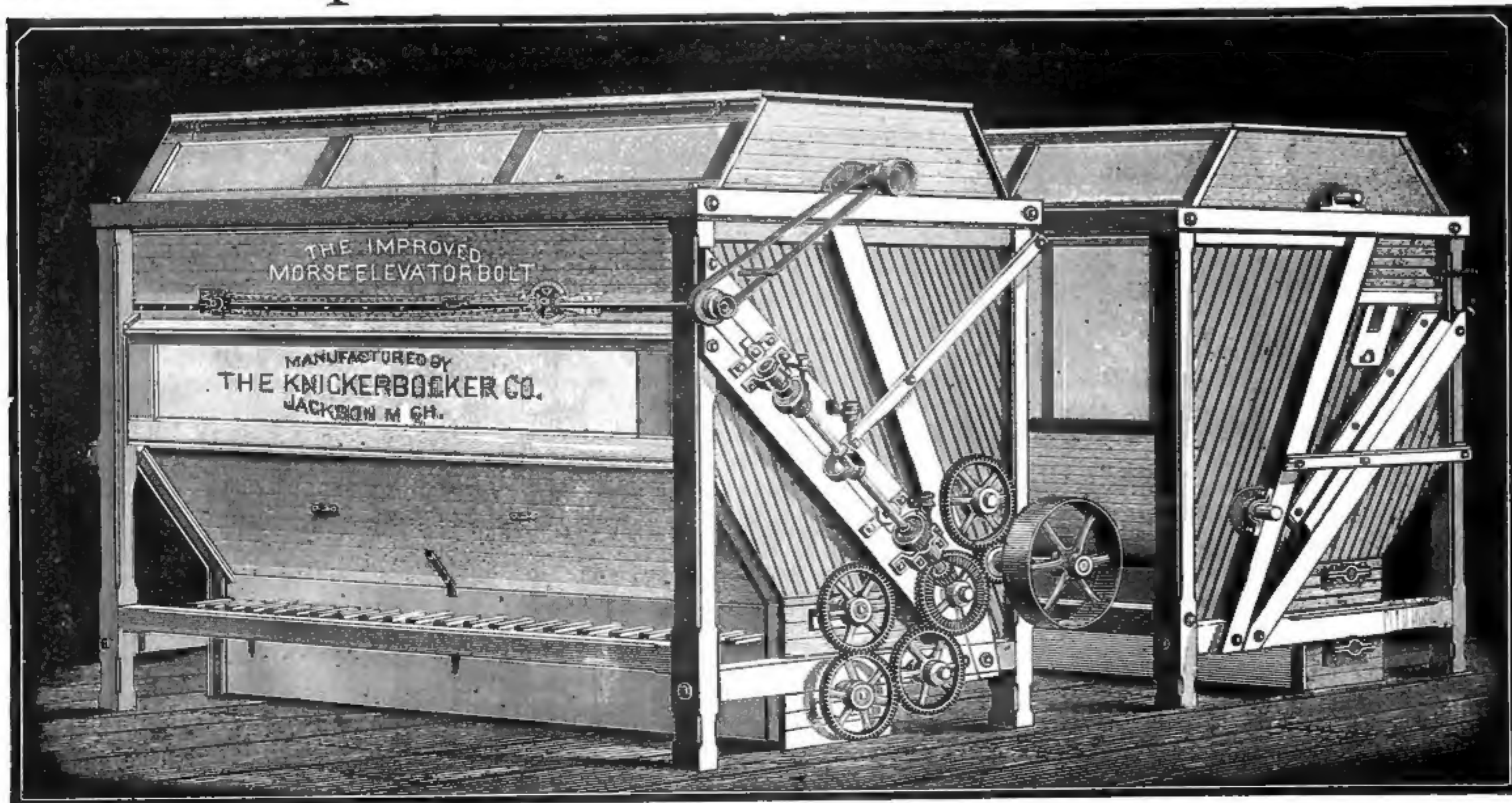
No 1, to face and crack \$25.00
No 2, to face, crack, dress furrows, and will dress any size stone. 45.00
No 3, to face, crack and dress furrows. 40.00

Will do as good work, and is more easily adjusted than any other machine. Sent on 30 days' trial. Address for circulars, containing full information.



C. S. HOOVER, Patentee and Manufacturer, 409 East King St., LANCASTER, PENN.

The Improved Morse Elevator Bolt.



DEMONSTRATED IN OVER 100 MILLS TO BE THE BEST BOLTING DEVICE KNOWN.

THE KNICKERBOCKER CO., JACKSON, MICH.

BURNHAM'S IMPROVED Standard Turbine

IS THE
Best constructed and finished,
gives better Percentage, more
Power, and is sold for less
money, per horse power, than
any other Turbine in the world.
New Pamphlet sent free by



Burnham Bros., York, Pa.

DeLOACH WATER WHEELS



From 2-10 to 2,000 horse power.
Simplest, most durable, best
gate for holding the water.
Fully equal in percentage of
power to any wheel made, and
price places it in reach of all.
Send for illustrated catalogue.
A. A. DeLOACH & BRO.,
Manufacturers, also of Milling
Machinery, Atlanta, Ga.
Mention this paper.

MACDONALD'S HYDROSTATIC



Sight-lines, targets, straight-edges and all other fixings,
as well as the extra time and help required to work them
with the spirit level, done away with by this instrument.
Jas. Macdonald, 85 Broadway, New York.

HAS BEEN AWARDED
FIRST AND ONLY PREMIUM
AT THE
Millers' International Exhibition.



Office of THE MILLING WORLD.
Buffalo, N. Y., Sept. 10, 1884.

Wheat is coming to market quite freely and there is of course under such a condition of affairs no tendency toward higher values. The New York Commercial Bulletin of this morning says: The stock of wheat in store in Chicago is now 3,240,035 bushels, against 3,354,676 bushels same day last week, a decrease of 124,641 bushels. All the unfavorable bearings were in force this morning,—a bearish sentiment at large; no confidence for long hold buying; weak cables; increasing interior movement; moderate export movement; good weather; blooming corn crop prospects; flouring mills getting to work on new spring wheat; a large increase expected to appear, by the Chicago calculation. On this basis, the market for wheat opened weak, and promptly sold off 10 from yesterday's closing figures, with the "Chicago visible" coming to help the weakness by showing an increase of 930,000 bushels in their statement, increasing the supply of wheat in the United States and Canada to 18,703,127 bushels.

Cash wheat is 10c lower, and in fair demand for export, although the late private cables are croaking panicky English markets. Local millers are buying moderately. Options close at a decline of only 1/8c on near months, as compared with yesterday's prices, the market having recovered on the later options in the afternoon naturally, after the late sharp break, with shorts conservative at prevailing low figures.

Heavy actual receipts of winter wheat flour, and, with the new spring wheat grinding to be soon set in motion, this market is generally weak; actually and decidedly so for winters, practically so for springs, for which buyers are holding off, while holders pretend to remain firm in their views. Sales of winter, in cases, show a decline of 5@10c to-day where goods have been forced. The sum of the day's trading is fair. As to springs, the truth of the matter is that holders are becoming a little anxious to sell old in anticipation of the prospective receipts of new. There is a good deal of irregularity in rye flour, and \$4.10 is practically the top when it comes to selling the best, although some holders ask more. Corn goods are getting softer in price, but show no actual decline. Mill feed is quiet and about steady.

FOREIGN EXCHANGE.

The market for sterling was dull and lower, the reduction in posted rates being made to conform to the actual market, which had previously been below posted quotations. Commercial bills continue in light supply, and few security bills are offering, but the inquiry remains light. The posted rates closed at 4.83 1/2 for sixty days' and 4.85 1/4 for demand. The actual rates ranged: At sixty days' sight, 4.82 3/4 @ 4.83; demand, 4.84 1/4 @ 4.85; cables, 4.85 @ 4.85 1/2, and commercial, 4.81 1/4 @ 4.81 3/4. Continental exchange very dull; francs, 5.21 1/2 @ 5.21 3/4 and 5.19 1/2 @ 5.18 1/2; reichsmarks, 94 1/2 @ 94 3/4 and 95 @ 95 1/4; guilders, 39 1/2 @ 40 1/2. The closing posted rates were as follows:

	60 days.	90 days.
London	4 83 1/2	4 85 1/4
Paris francs	5 19 1/2	5 16 1/2
Geneva	5 18 1/2	5 16 1/2
Berlin, reichsmarks	94 1/2	95 1/4
Amsterdam, guilders	40 1/2	40 1/2

BUFFALO MARKETS.

FLOUR—City ground clear Northern Pacific spring \$4.75 @ 5.25; straight Northern Pacific spring, \$5.25 @ 5.75; amber, \$5.25 @ 5.50; white winter, \$5.25 @ 5.50; new process, \$6.25 @ 6.75; Graham flour, \$4.50 @ 5.25. Western straight Minnesota bakers, \$5.25 @ 5.50; clear do, \$4.75 @ 5.25; white winter, \$5.00 @ 5.25; new process, \$6.25 @ 6.75; low grade flour, \$3.50 @ 4.00. OATMEAL—Ingersoll \$5.75; Bannerman's \$6.00; Akron \$6.25. CORN-MEAL—Market steady, with a fair demand. Coarse, \$1.15; fine, \$1.25 per cwt. RYE FLOUR—In fair demand \$4.00 @ 4.25. BUCKWHEAT FLOUR—Demand fair at \$3.50 per cwt. WHEAT—Quiet. For No. 1 hard Duluth 90c asked cash, 87c asked Sept, 86 1/2c asked 85c bid Oct. No. 1 white winter offered at 86c; sale three car-loads No. 1 longberry red at 87c. CORN—Easier. Sale 8,300 bu No. 2 at 61c to arrive, 14,200 bu. No. 3 at 58c, and six car-loads do at 60c on track. OATS—Dull. No. 2 white Western offered at

DUFOUR & CO.'S CELEBRATED BOLTING CLOTH.

38 1/2c on track; mixed do quoted at 30 @ 31c. BARLEY—Season over; market nominal. RYE—State quoted at 50 @ 60c; No. 1 Western 60 @ 67c.

THE CHESAPEAKE AND OHIO ELEVATOR.

A correspondent of the New York Commercial Bulletin, writing from Newport News, says: There is no doubt that the Chesapeake & Ohio grain elevator has proved a powerful factor in the development of Newport News. As the visitor sails by Old Point Comfort on the Old Dominion steamer, the elevator looks in the distance like a huge mountain. As the visitor approaches nearer this port, the massive proportions of the great structure begin to unfold themselves, and the busy hum within, and activity without, are perhaps the first real evidence of what the steamers and other craft anchored in the harbor are waiting for. Though only just completed, it should be observed that this elevator has already handled a fair share of the new grain crop. On August 2, the British steamer, Mary & Louisa, sailed hence for Antwerp with 91,000 bushels of red winter, most, if not all, of which was grown in Kentucky. On Thursday, the 14th ult., the steamer "Connaught" took 72,000 bushels for Dunkirk, France, of the same grade. On August 22, the steamer "Thos. Allen" took 72,000 bushels for Lisbon; on the 30th the steamer "Fernholm" took 18,000 bushels for Antwerp, and on the 31st, the steamer "Marima" sailed from this port for Cork for orders with 75,000 bushels. This wheat was of excellent quality and has elicited very favorable comment from the consignees on the other side of the Atlantic. Other steamers are waiting for cargoes, and the elevator's capacity will be fairly tried during the next few months. The grain people here hold that their grades are better than those of Baltimore or New York, and those engaged in the trade here say that when an order is given for No. 2 red, or any other grade, the buyer gets what he asks for. Your correspondent visited the structure to-day. It is said to be the most complete of its kind in existence. It is 90 feet wide, 386 feet long and about 164 feet high, with engine and boiler rooms 40x100 and 40 feet high. In its construction there were used about 3,000 piles, 100,000 feet of white oak timber, 82,000 cubic feet of stone, 800,000 brick, 8,000,000 feet of pine and spruce lumber, 4,500 kegs of nails, six large boilers, two large engines, 200 tons of machinery, 20 large hopper scales; and 17,200 feet of rubber belts, in sizes varying from eight to forty-eight inches in width and from 50 to 1,700 feet in length; and, in addition, there were 8,000 elevator buckets and other material used in building such structures.

The storage capacity of the house is 1,600,000 bushels, with a receiving capacity of 30,000 and a shipping capacity of 20,000 bushels per hour. Car tracks run through the building, and ten cars can be placed on each side of the "house," so that they may deliver grain to separate pits. There are 20 elevator legs connecting with these pits, which in turn deliver the grain to 20 scales on the upper floor, where each load is weighed separately and disposed of according to the grade in the bins. The grain is then conveyed to the vessels on the large belts which run to the piers. A marine elevator on one side of the pier elevates to the belt conveyers, carrying from the small craft to the elevator large quantities of grain picked up at contiguous points. One word in respect to its fire precautions. On every floor and almost at every point a number of Harden's hand grenades are placed. Large pipes also run along every story from the foundation, and hose and valve can be applied instantly in case of a break out of fire. Indeed, it would be impossible for a fire in any part of the building to make much headway. The water supply cannot get exhausted unless the James River should give out, and the pumping is done by the Company's own works. The water can be raised to a pressure of about 175 feet. The pumps are ready for action day and night. The elevator is covered with sheet iron, has 350 storage bins, 6 shipping bins and every appliance known to modern invention. In cleaning facilities, it has two Sturtevant blowers connected with shaking screens, and two additional cleaning works are now in course of construction. A vessel can be loaded in bulk to the extent of about 100,000 bushels a day from each beltway; and as there is never less than 40 feet of water at the piers, vessels can be loaded at all hours. The lumber in its construction came mostly from Maine, Georgia and Virginia; the stone from New York and Virginia; the brick from Richmond, Va.; boilers and engines from Stearns Manufacturing Company, of Erie, Pennsylvania; the belts from

New York; and the machinery, including elevator tanks, boots and heads, line shafting, hopper-castings, spouts and valves, horizontal conveying machinery, tripping machines, rollers, tighteners, &c., from Baltimore, Md. This description will probably be sufficient to give your readers an idea of the proportions of the second largest structure of its kind in the world.

NO. 2 RED WINTER AT NEW YORK.

The New York Produce Exchange did a good day's work last week when they re-established the grade No. 2 red winter wheat on a higher level. The result is the outcome of a protracted struggle between two factions, and the exchange is to be congratulated that the victory is on the side of sound wheat. The specification of what No. 2 red wheat (contract delivery grade) should consist of, included "dry, sound and reasonably clean" wheat, but was rendered of no account by the existence and toleration of guides for inspection known as samples of "the bottom of the grade." These samples were supposed to represent the poorest quality of wheat that could be allowed to pass as No. 2 red, and included so much dirt, a little buckwheat, a little barley, some long and some short berries, and, in short, was a conspicuous mixture of a good deal else than wheat. These samples were sent all through the west to the larger shipping points where it soon became the practice to grade the good wheat received down as low as the New York samples before sending the grain forward. This "science"—that of grain-mixing—has proved a very profitable employment, and a good number of firms, conspicuously at Buffalo and at New York, have made a great deal of money by judiciously mixing a boat-load or two of inferior wheat with five or ten boat-loads of excellent grain, and thus making the whole marketable as No. 2 red because of the mixture's barely reaching the type-sample of "the bottom of the grade." This was, of course, nothing more or less than adulteration of grain. Its practice, while open to condemnation, has not reflected otherwise on those who practiced it because it was done openly and above-board. The very rules of the exchange encouraged it by the establishment of the type-sample of "the bottom of the grade." The natural outcome of the continued indulgence in sales of and speculation in adulterated grain have been met with. Foreign buyers of American wheat have learned to shun grain offered as "New York inspection" and have demanded St. Louis, Toledo, Baltimore or New Orleans inspection instead.

This has reflected on New York's export trade in that cereal, and suggested the phrase "New York's gamblers in rotten grain," in which there has been so much truth as to compel admission of the charge by the friends of "the bottom of the grade" method of inspecting. On this point it may be explained that the foreign substances mixed with the grain when the grading takes place are likely, after long storage, to cause the wheat to heat quicker, and thus create unsoundness. In January last it is charged that 1,500,000 bushels posted here as unsound became so through this evil of adulteration. By the action taken, after hearing majority and minority reports from the grain committee and the joint advisory committee appointed to consider the re-establishment of the grade (No. 2 red), the report (majority) was adopted that No. 2 red winter shall conform to the following description: * * * "Shall be sound, dry and reasonably clean, weighing not less than 58 1/2 pounds, Winchester standard, and shall not contain over 10 per cent. of white wheat." The weight gauge was added to the old nominal type of No. 2 red by this, but the master stroke consisted in the abolition of the type-sample "heretofore known as the bottom of the grade." This action was materially assisted, of course, by the much better quality of the crop of wheat grown in 1884 than that of the previous year and by the very small stocks of the latter remaining in store here. To no others is more credit due for the important change made than to Messrs. H. T. Kneeland, Bingham Brothers and Power, Son & Co. The minority party, or those who upheld and still claim an advantage in the employment of the "bottom of the grade sample," appear to base their view on the evident superiority of an absolute sample against which or toward which grading can be made. As now arranged they allege that the standard is capable of various constructions, and the use of absolute standards and weights by the ancients is cited as precedent. Whether this claim be admitted or not, one of the largest firms of grain receivers, known as mixers, grants that the type-sample of the bottom of the grade has been too

FIRST AND ONLY PREMIUM
OVER ALL COMPETITORS!
PURCHASE ONLY
FROM RELIABLE DEALERS.

low. To the layman in such matters a "bottom of the grade" sample on which to sell, as against clean grain purchased, is in itself open to question on the ground of commercial morality. It needs no argument to prove that it sets a premium on furnishing an inferior compound. But the better sense of the exchange has asserted itself, and there is reason to believe that the New York standard No. 2 red wheat will hereafter be sought instead of avoided in the markets of the world.—Bradstreet's.

NOTES.

The Miller Co., Canton, Ohio, have shipped one of their No. 3 boiler feeders to the Acme Milling Co., Olena, N. Y.

The Miller Co., Canton, Ohio, have received an order from J. E. Welch, Athens, Ill., for one double set of rolls.

The Miller Co., Canton, O., have shipped the Alex Wilber Milling Co., Clark, Dak., one of their No. 6 boiler feeders.

The Case Mfg. Co., Columbus, Ohio, have an order from G. J. Burrer, Sunberry, Ohio, for two pair rolls and other machinery.

The Miller Co., Canton, Ohio, have received an order from the Slater Mill Co., Blanchester, Ohio, for one of their Triple roller mills.

The Sterrett Elevator company will build a warehouse for wheat at St. Vincent. A large elevator will be built in the spring.

Wood & Kenyon, Onawa, Iowa, are putting in two pair rolls with patent automatic feed, from the Case Mfg. Co., Columbus, Ohio.

The Miller Co., Canton, O., have shipped to Wm. Randall, Frankport, Va., one pair of Miller rolls with perfect silent feed automatic.

The Case Mfg. Co., Columbus, Ohio, have an additional order from Wisner Bros., Lowell, Mich., for one pair rolls with patent automatic feed.

The Case Mfg. Co., Columbus, Ohio, have an additional order from Leggett & Everdeen, Centerville, Ind., for two pairs of rolls with automatic feed.

Daniel Smith, Haysville, Ohio, is making some changes in his mill, and is putting in three pair of rolls with patent automatic feed from the Case Mfg. Co., Columbus, Ohio.

The Miller Co., Canton, Ohio, have contracted with S. C. Hilles & Bro., of Barnsville, O., for an entire change of their mill to the Rider system. This is the second mill the Miller Co. has built in Barnsville since April.

The Case Mfg. Co., Columbus, Ohio, have been awarded the contract of C. W. Ellis, Dubois, Ind., for a complete outfit of breaks, rolls, purifiers, centrifugal reels, scalping reels, bolting chests, etc., for a full roller mill on the "Case" system. Twelve pairs of rolls will be used, and the mill, when completed, will have a daily capacity of 60 to 75 barrels.

A Minnedosa, Manitoba, correspondent under date of 23rd August says: "The grain in this section is now being cut and most of it, if not all, will be safe from frost by the end of the following week. The crops are the finest we have ever had. Two elevators are being built, one of 20,000 bush. by Johnstone, Roache & Co., the other 40,000 bush. by the Ogilvie Milling Co's. Everything looks bright for a good fall and winter's business."

By experiments conducted at Houghton Farm, N. Y., it appears that it is rare that an exact bushel of corn is actually sold. A standard bushel of corn weighs 56 pounds, but this should contain 50 pounds of dry matter. The 56 pounds of corn at harvest weighs 42 pounds when dried, and 56 pounds of green corn when kept for a few months usually falls below 46 pounds. Corn after having been kept a year comes very near its 50 dry substance. Corn will vary perceptibly in weight from dry to wet weather. It is probable that a yield of 100 bushels per acre by weight, say 30 days after husking, would show a great falling off if weighed after six months. About 65 pounds of new shelled corn is required to make 50 pounds of dry corn.

JAMES S. MCGOWAN & SON,
SHIPPING AND COMMISSION MERCHANTS.

Choice Milling Wheats a Specialty

Room 60 Board of Trade Building.

BUFFALO, N. Y.

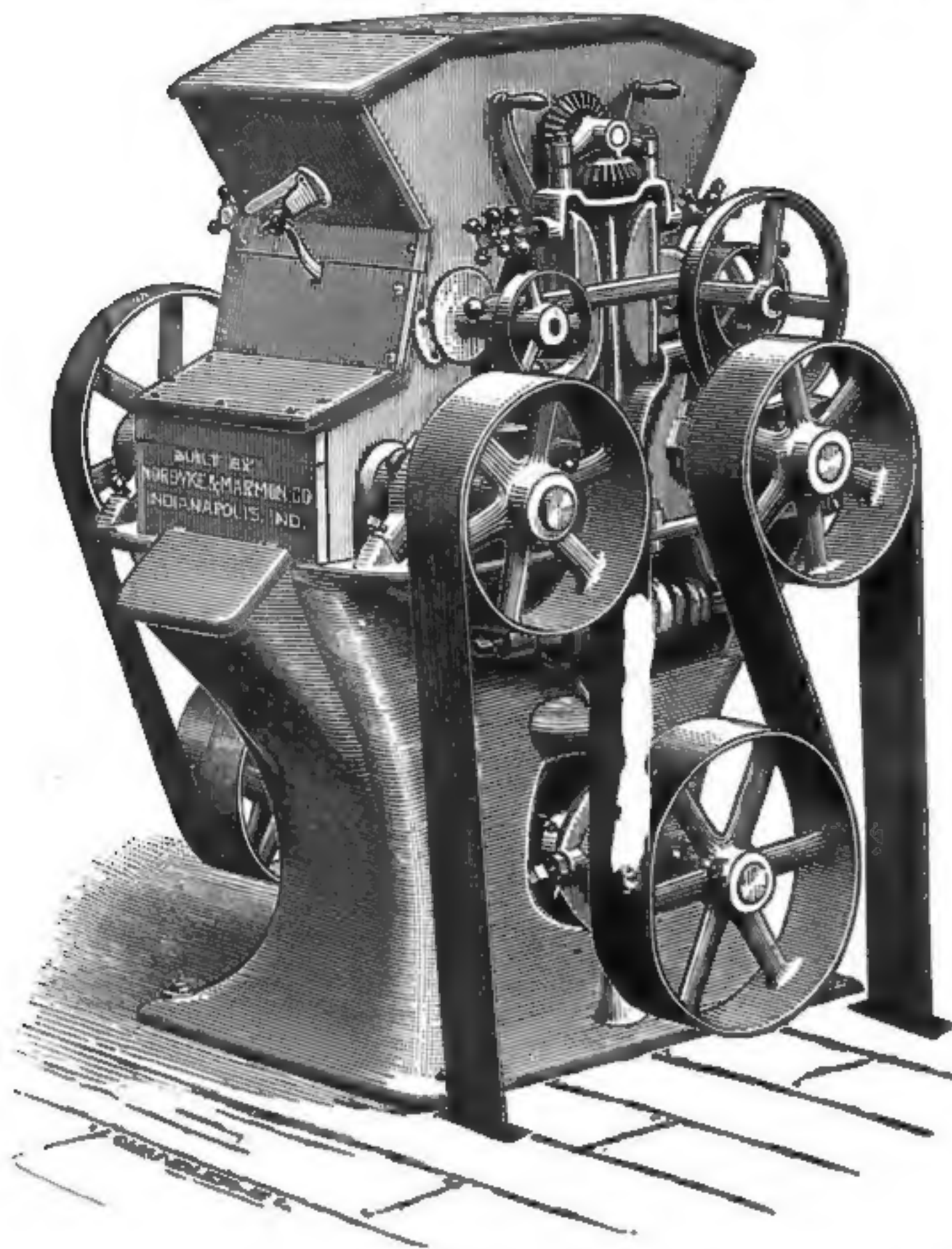
No Charge for Inspection

NORDYKE & MARMON CO., INDIANAPOLIS, IND.

Builders from the Raw Material of

ROLLER MILLS, CENTRIFUGAL REELS, FLOUR BOLTS.

WE ARE THE SOLE OWNERS FOR THE UNITED STATES OF ALL THE PATENTS UPON THIS ROLLER MILL.



This Is the Only Roller Mill Made Having All the Essentials Needed In Successful Milling.

500 BARREL MILL IN MISSOURI.

Read what an Old Miller who has Thirty-Four Pairs of these Rolls in Constant Use, Says:

MESSRS. NORDYKE & MARMON CO., INDIANAPOLIS, IND.

Gentlemen: In regard to the workings of our new mill erected by you, will say it is working fully up to and beyond our expectations. Our average work is fully 88 per cent. over your guarantee. Since starting our mill last July we have had no complaint of our flour from any market where sold. It gives universal satisfaction, and we have it scattered on the trade from Chicago to Galveston, Texas. Our yields are all that are attainable. We have tested it on both Spring and Winter wheats with satisfactory results on both varieties. Since the mill was turned over to us we have not changed a spout or a foot of cloth, nor have we found it required to make any changes. We have run as long as six days and nights without shutting steam off the engine, not having a "choke" or a belt to come off. The mill is entirely satisfactory to us, and for a fine job of workmanship, milling skill and perfection of system, we doubt if it is surpassed in the United States to-day. It is certainly a grand monument to the ability and skill of Col. C. A. Winn, your Milling Engineer and Designer. You may point to this mill with pride and say to competitors, "You may try to equal, but you will never beat it." Wishing you the success that honorable dealing deserves, I am, Yours, etc.,

OFFICE OF DAVIS & FAUCETT MILLING CO.,
ST. JOSEPH, MO., Nov. 28th, 1883.

R. H. FAUCETT, PRES.

500 BARREL MILL IN ILLINOIS.

MESSRS. NORDYKE & MARMON CO., INDIANAPOLIS, IND.

Gentlemen: We started up our mill in June last year, and it gives us pleasure to say that your Roller Mills are doing splendid work and give us no trouble. Your milling program required no changes, and concerning yields, we get all the flour from the offals, and we sell our best grades in the principal markets of the United States at the highest prices offered for any flour. All the machinery made by you is first-class, and we would not know where to purchase as good. Yours respectfully,

OFFICE OF DAVID SUPPGER & CO.,
HIGHLAND, ILL., Jan. 10, 1884.

DAVID SUPPGER & CO.

125 BARREL MILL IN INDIANA.

NORDYKE & MARMON CO., INDIANAPOLIS, IND.

Gentlemen: The 125 barrel All Roller mill you built us has been running all summer, and does its work perfectly. Before contracting with you for this machinery we visited many Roller Mills throughout the West and Northwest, built by the different leading mill-furnishers, and from all we could see, those built by you seemed to be giving the best satisfaction, and this is why we bought our machinery of you. Our mill comes fully up to your guarantees, and the capacity runs over your guarantee. The bran and offal is practically free from flour, and our patent and bakers' flour compares favorably with any we have seen elsewhere. I don't think anyone can beat us. Your Roller Machines are the best we have seen; they run cool, and the interior does not sweat, and cause doughing of the flour. Judging from our success, we would recommend other millers to place their orders with you. Yours truly,

LAPEL, MADISON COUNTY, IND., Jan. 10, 1884.

J. T. FORD.

Letters on file in our office from a large number of small roller millers giving as favorable reports as above. A portion will be published as occasion demands.

SPECIAL MILLING DEPARTMENT!

Mill Builders & Contractors--Guarantee Results

Motive Power and Entire Equipment of a Modern Mill Furnished under one Contract.

Toledo Mill Picks and Stone Tool Mfg. Co.

Manufacturer and Dresser of
MILL PICKS.

Made of the very best double-refined English cast steel. All work guaranteed. For terms and warranty, address
GEO. W. HEARTLEY, No. 297 St. Clair Street, Toledo, O. Send for Circular.

N. B.—All Mill Picks ground and ready for use (both old and new) before leaving the shop. No time and money lost grinding rough and newly dressed Picks. All come to hand ready for use.

ALSO MANUFACTURERS OF
SHAFTING, PULLEYS, HANGERS, COUPLING AND MACHINE JOBBING.

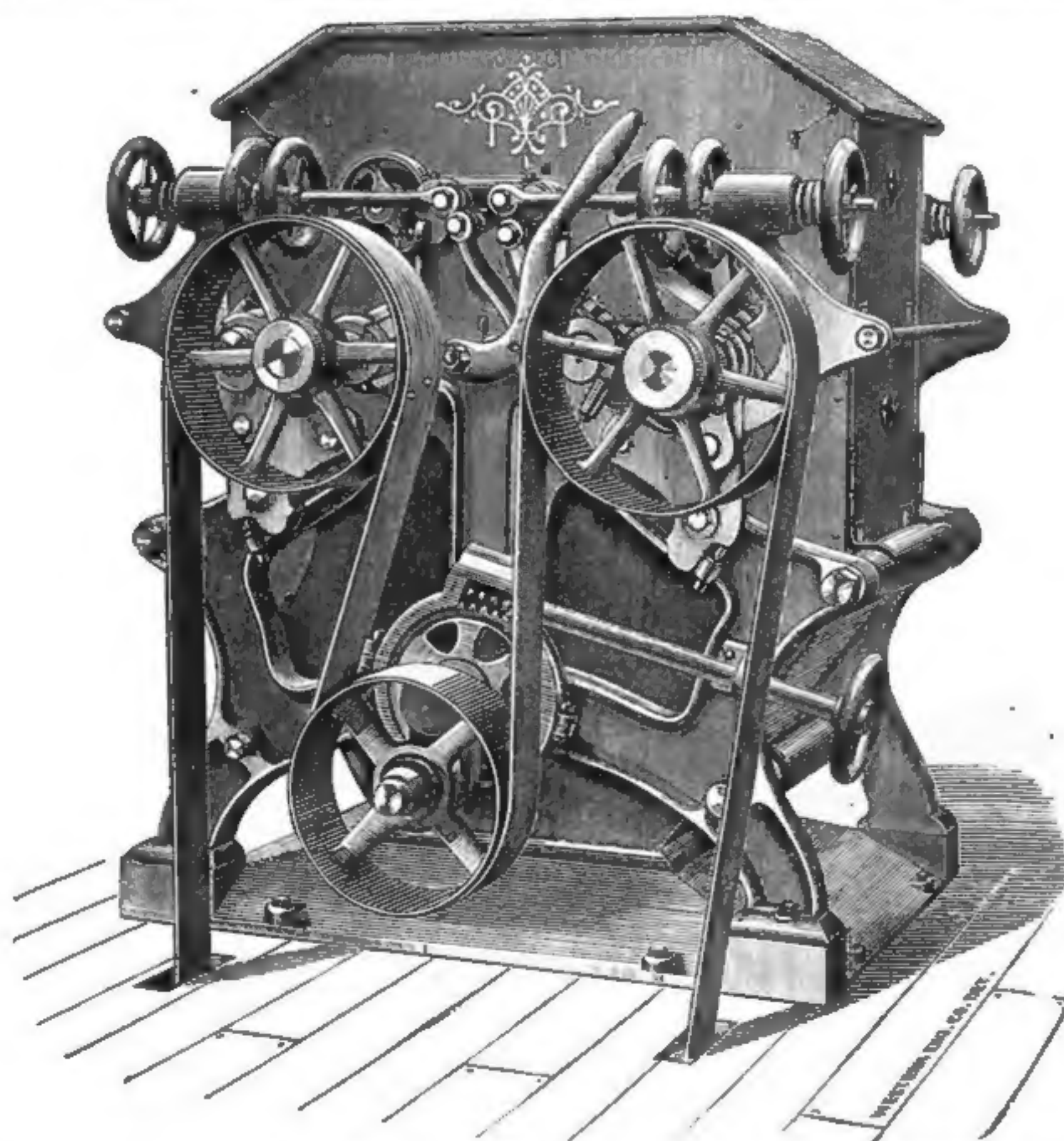
JOHN C. HIGGINS & SON,
Manufacturers and Dressers of
MILL PICKS.
168 KINZIE ST., CHICAGO.



Picks will be sent on 30 or 60 days' trial to any responsible Miller in the United States or Canada, and if not superior in every respect to any other pick made in this or any other country, there will be no charge, and I will pay all express charges to and from Chicago. All my picks are made of a special steel, which is manufactured expressly for me at Sheffield, England. My customers can thus be assured of a good article, and share with me the profits of direct importation. References furnished from every State and Territory in the United States and Canada.

Send for Circular and Price List.

The MILLER ROLLER MILL



Has no superior. Universal Tightener, Automatic Feed, Tight Base, Noiseless, with Non-Cutting Corrugations. We also manufacture the Rider Wheat Break, which has no equal for 1st, 2d and 3d Breaks. Send for Reference and Circulars of our Machines.

THE MILLER CO., CANTON, O.



AUTOMATIC SCALES & REGISTERS

The only perfect scales and registers in the world. Particularly adapted for millers' requirements.

SENT ON TRIAL.

Beware of Infringements

We guarantee the accurate performance of the scales and registers in every case. Send for circular, and mention THE MILLING WORLD.

THE M. F. KOCH MFG. CO.

63 Prince Street, New York.

KEYSTONE CENTRIFUGAL REEL

—PATENTED MAY 6th, 1884.—

Drag Brush Feed, Tightest Heads, Best Results. Cheapest and Best on the Market. Adapted to all Kinds of Milling. The New Drag Feed Thoroughly Protects the Silk. Sent on Trial to any Responsible Miller.

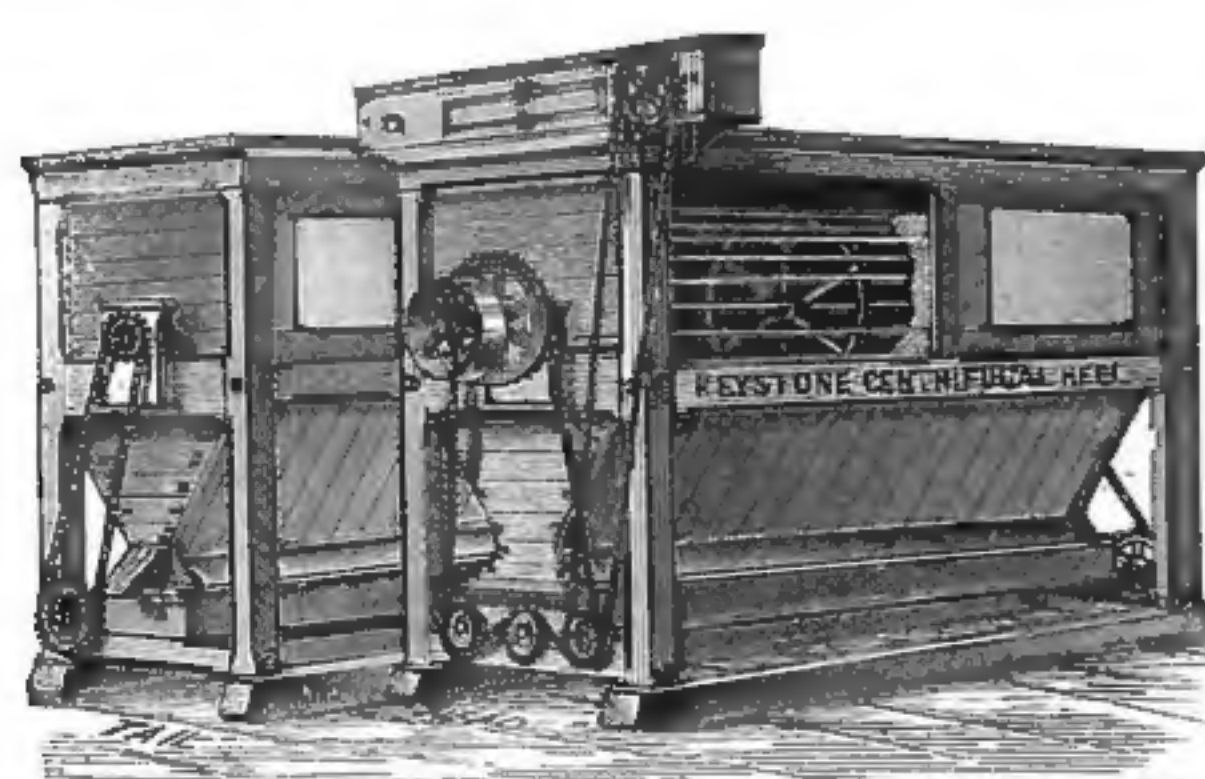
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Leather, Rubber and Cotton Belting, Smut Machines, Purifiers and everything belonging to a Flour Mill furnished at Lowest Market Prices. For Circulars, Prices and Full Particulars, address the Manufacturer,

C. K. BULLOCK, 1357, 1359, 1361 RIDGE AVE., PHILADELPHIA, PENN.



ONE OF THE KIND OF MILLS WE BUILD.

LAURY'S, PA., SEPTEMBER 1, 1884.

THE JOHN T. NOYE MFG. CO., BUFFALO, N. Y.

GENTLEMEN: Since putting in the rolls made by you, and changing the bolting arrangements as advised, I have been running night and day, turning out over two hundred barrels of flour per twenty-four hours, with a yield surprisingly under $4\frac{30}{60}$. I doubt if our flour can be beat in this country. This statement is pretty strong, but can be backed up. I can clean the middlings so that there is not a particle of flour left. Millers coming here to see our offal, do not believe but I have some secret way of manipulating the material. It is all square milling on superior rolls and with a superior system. I could not fill my orders if I had double the capacity.

Yours truly, J. R. SCHALL.



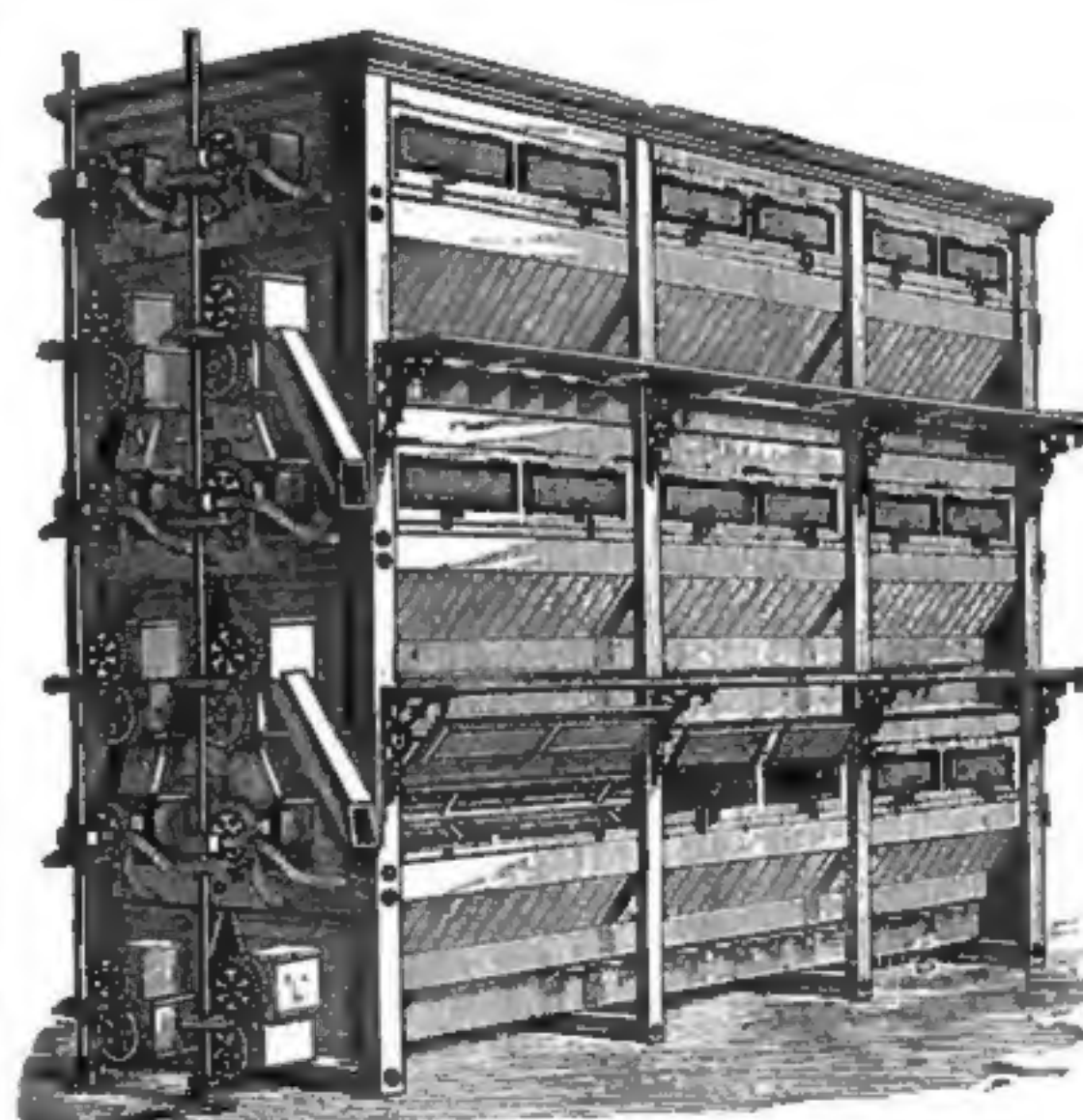
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